# Pests

AND THEIR CONTROL

1942
JANUARY
VOL. 10 NO. 1

ORGAN OF THE PEST CONTROL INDUSTRY

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Fumigators
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# Pests

and Their CONTROL

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COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

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Three classes of membership: Active, Associated and Allied. ACTIVE MEMBERSHIP includes all firms engaged in any type of Pest Control operations (general extermination, fumigation, termite control, moth proofing) and dues are $15.00 per year. ASSOCIATE MEMBERSHIP includes branch offices of Active members and yearly dues are $10.00. ALLIED MEMBERSHIP includes manufacturers and supply houses.

**STATEMENT**

The National Association appreciates the co-operation given by way of publicity. The Association is not responsible for articles published unless credited to the Association. The list of officers and directors is published for informational purposes only.

*For further details, communicate with*

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**3019 Fort Hamilton Parkway** — **Brooklyn, New York**


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*"Contributed articles in this publication do not necessarily reflect the opinions of the editors. The editors invite discussions, comments and all types of literary material pertaining to pest control and pests from any person interested in the advancement of the field."*


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# EDITORIAL

## The Tenth Year

WITH this issue, PESTS, and their control, enters its tenth year of publication, a source of much pleasure to us, as indeed we hope it is to our readers. Coincidental with this publication period, the Pest Control Industry has achieved its greatest measure of growth, a reflex conditioned no doubt by the industry's conscious realization of its place in the public welfare, and its conscientious preparation to worthily fill that place. As concrete evidence of the Industry's growing stature, one need only mention the National Pest Control Association's Code of Ethics, its control standards now in operation, its recognition by the entomological profession, and its quest for adequate research.

With the nation plunged into war, the Industry fortunately opens the new year better equipped than ever before to contribute to its successful prosecution by assisting in the preservation of public health, by preservation of foodstuffs, and other similar necessitous services.

## The National Association "Produces"

VISION is a priceless possession of many and yet there are only a few sturdy individuals with sufficient vision to carry out a project to a definite conclusion. We are fortunate in the caliber of the members of the National Association and particularly fortunate in the leaders and officers who guide the affairs and activities of the pest control industry.

It is now nine years since some in the industry, aroused by their vision of an enlightened, united organization, banded together to form the National Pest Control Association. Naturally there have been some hindrances and many problems, some seemingly impossible to surmount, but through them all, our leaders have kept their eyes focused on their objective and with this vision ever before them have not allowed obstacles to swerve them from their purposes. Every obstacle has but served to show unsuspected weakness and to focus attention on the ends to be accomplished so that every effort could be bent toward a better and more highly respected household pest control industry.

Consider some of the accomplishments of the National Association or those that are in the process of being accomplished. It is a source of great pleasure when looking up a PCO in the phone book to find the name under the listing "Pest Control." While this is not uniform the country over it is sufficiently uniform to consider it only a matter of time until there will be no such thing as an "Exterminator," "Bug Killer," or "Fumigator" listing. Right along with this change there has come about a higher, more wholesome respect for the PCO. The National Association is almost wholly responsible for this changing attitude due to its efforts to improve and raise standards and ethics of PCOs, which in itself is another accomplishment. The increased efficiency, the higher type of service operations, the greater regard for customer satisfaction, are a direct result of National Association effort. We should also say that local associations have done their part but much in the program of local organizations may be credited as an outgrowth of inspiration and knowledge gleaned through National Association activities.

We note with deep satisfaction the changing attitude of PCOs and entomologists toward each other. There is a wholesome respect shown and an understanding which is the result of a better appreciation of the role each plays in pest control. The cementing of friendship and the efforts to promote harmony, cooperation and understanding between the PCOs and entomologists is another objective rapidly being accomplished through the intelligent policy of the National Association. Even the changed attitude among the operators themselves is a source of wonder and satisfaction. It is nothing unusual for operators in the same cities to be the best of friends, an unheard of thing a few years back. Indeed we now recognize that it is sound vision to cooperate with intelligent competing PCOs. The suggestion of the National Association that PCOs hold frequent informal get-together meetings and luncheons in order to become better acquainted with each other is no doubt responsible for this change.

Another objective partially accomplished is the growing belief that definite value accompanies membership in the National Association. There are still those who are short sighted and do not visualize the value of a group such as the National Association only a few of these of course.

Vision was needed in order that these attainments and many other projects with consideration might become an accomplished fact. Our leaders are to be congratulated on their vision and their ability to keep their eyes fixed on progress. Vision is still a requisite to the continued growth and development of the Association. We believe our leaders have vision, for the success of our program thus far encourages us to look for complete fruition of our objectives—an intelligent pest control industry recognizing its importance in public service in terms of consistent and satisfactory service to the end that pests are eliminatable and maintenance service provided that will prevent any serious reinfestations.

"It is but a short step from out of sight to out of mind."
—*N. W. Ayer & Son, Inc.*

## Bronx Zoo, N. Y., Plans Exhibit of Live Common Household Insects

IN CONNECTION with the N.P.C.A. program of fostering better public understanding of the services the industry has to render, an article in The New York Times Magazine Section, October 26, 1941, by Raymond L. Ditmars, Curator of Reptiles and Insects, New York Zoological Society, titled, "Good—and Bad—Insects," is more than passing interest. It states, among other things, "the zoo is planning an insect house which will eventually contain a great collection of world-wide scope . . . and that it is planned to fit up a doll's house showing all the common household insects, which it is hoped will have the effect of making them more widely and vividly understood." Doubtless it will prove so. This medium of public education should also dispose towards an even greater recognition and acceptance of the value of the pest control industry, particularly if data concerning the economic importance and health hazards of the insects is included.

So far as is known, this will be the first insect house at any American zoo. It may, therefore, be of timely interest to reprint two sentences from an editorial on the importance of this development, which appeared in December, 1940, Pests: "The constructive implications of such an exhibit from the viewpoint of the pest control profession are obvious. Local pest control associations can do much to further the idea of such exhibits in various zoos throughout the country."

May we also commend and thank Dr. Ditmars for his pioneering spirit which should help add to the sum knowledge, amusement and health of the public.

## New Assignments for Sievert A. Rohwer and William Lee Popham in Bureau of Entomology and Plant Quarantine

THE recent announcement by the U. S. Department of Agriculture of the appointment of Sievert A. Rohwer to take charge of regulatory work in the Bureau of Entomology and Plant Quarantine, and the appointment of William Lee Popham as assistant chief in charge of control operations in the same bureau, is of welcome interest to the pest control industry. Both gentlemen bring to their new duties a broad experience along entomological lines. Before Mr. Rohwer's present assignment, he was an assistant chief in the bureau, while Mr. Popham had been in charge of barberry eradication work of the bureau since 1934. Sincere well wishes are extended to Messrs. Rohwer and Popham in their new responsibilities.

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NOTE: *When the authorship of the article is omitted it designates that the article was written by staff members.*

# Hold Annual Meetings

**The American Association of Economic Entomologists and the Entomological Society of America Assemble at St. Francis Hotel, San Francisco, Calif., December 29, 1941, Through January 1, 1942**

With press-time for PESTS intervening along about the time the annual meetings of the American Association of Economic Entomologists and The Entomological Society of America were held in San Francisco, it was, therefore, impossible to give appropriate details of the principal speakers or addresses in this issue. However, a subsequent issue of PESTS will direct attention of the industry to papers delivered of interest to PCOs which will appear later in The Journal of Economic Entomology, Official Organ American Association of Economic Entomologists.

## Avoid Hamburg, Adolf, They're Poisoning Rats

Bern, (CDN)—In connection with an order just issued in Hamburg, Germany, for a citywide rat poisoning campaign next Sunday, the Hamburger Fremdenblatt today prints figures showing the damage done by these animal pests every year.

The newspaper calculates the labor of 100 thousand Germans is required simply to feed the reich's rat population and estimates the annual damage done by these pests at 300 million marks.

Don't be fooled: that "stop, look and listen" sign at railroad crossings is not intended for the engineer.

# The Fourth Annual Southern Pest Control Operators Conference

AN UNUSUAL program has been arranged for the Fourth Annual Southern Pest Control Operators' Conference to be held at Louisiana State University, University, La., on January 26, 27 and 28. This conference specializes in meeting the greater Southern problems so that the program will take the form of more active participation by the pest control operators themselves.

Professor O. W. Rosewall, head of the Entomology Department; W. E. Anderson, State Entomologist, and Dr. Thomas E. Snyder are scheduled to present outstanding papers. Others of the Entomology Department staff will likewise participate. The general plan is that of the entomologists and scientists presenting papers on the research phases of our work and each of these papers in turn will be followed by a talk by various key men of the industry who will approach these same subjects from the practical every day pest control service angle.

Unfortunately, the detailed program has not been received as we go to press, but full details will be sent to all firms of the industry the early part of January. All pest control operators are cordially invited to attend, regardless of any membership in an association. The "Informational Registration" forms may be had by writing directly to Professor Rosewall at Louisiana State University, University, La., or to the Secretary of the National Pest Control Association at 3019 Fort Hamilton Parkway, Brooklyn, N. Y.

All firms are urged to make their own hotel reservations by writing to any of the following hotels in Baton Rouge, La.:—

Heidelberg Hotel, Baton Rouge, La; Single: $2.50, $3.00, $3.50, $4.00 and $5.00. Double: $3.50, $4.50, $5.00 and $6.00. Twin Beds: $4.50, $5.00 and $6.00 (all rooms with bath).

King Hotel, Baton Rouge, La.: Single without bath, $1.50; with bath, $2.00. Double without bath, $2.25; with bath, $3.00.

Istrouma Hotel, Baton Rouge, La.: Single without bath, $1.50; with bath, $2.00 and $2.50. Double without bath, $2.50; with bath, $3.00 and $3.50. Connecting bath—single, $1.75; double, $2.75.

Hotel Louisiana, Baton Rouge, La.: Single without bath, $1.50; with bath, $2.00. Double without bath, $2.25; with bath, $3.00.

Bus Service from business district and hotels of Baton Rouge, La., to Louisiana State University is at 15 minute intervals.

Meals: Louisiana State University Cafeteria serves good meals at reasonable prices. Plan also to attend the Banquet on Tuesday evening.

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**PROGRAM**
**Fourth Annual**
**Southern Pest Control Operators' Conference**
Louisiana State University,
Baton Rouge, La.

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First Day
Monday, January 26, 1942

8:30 A.M.—
Registration, Room 102, South Agricultural Building.

MEETINGS
Meeting Place:
John M. Parker Auditorium
Chairman: O. W. Rosewall

10:00 A.M.—12:30 P.M.—
Welcome: Major Fred C. Frey, Dean of the University.

The Southern Pest Control Operator: W. E. Anderson.

A Southern Pest Control Operators' Association: O. W. Rosewall.

Report on the 1941 National Pest Control Association Convention: Wm. O. Buettner.

Mosquitoes: W. W. Wirth.

1:00 P.M.—Luncheon:
(Arranged by L. S. Bridges.)

2:00 P.M.—
Know Your Insects: E. R. Barber.

2:30 P.M.—4:30 P.M.—
The Structure of Insect Pests and Their Identification: J. H. Roberts.

7:00 P.M.—
Chemicals, the Pest Control Operator Industry and the War: Wm. O. Buettner.

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Second Day
Tuesday, January 27, 1942
Meeting Place:
John M. Parker Auditorium
Chairman: Wm. H. Gates

9:00 A.M.—12:30 P.M.—
Termites and Their Control: Thos. H. Snyder.

How I Do a Termite Job: Walter B. Hill.

General Discussion of Termites: Led by Louis Kotler.

1:00 P.M.—Luncheon.
Chairman: J. H. Roberts

2:15 P.M.—5:00 P.M.—
Powder Post Beetles: M. B. Christian.

Building Structures: E. B. Doran.

Wood Fungi: C. W. Edgerton.

Wood Boring Beetles: Discussion.

7:00 P.M.—Dinner.
L. S. Bridges in charge.

Discussion of Legisation: Led by Tolbert Slack.

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Third Day
Wednesday, January 28, 1942
Meeting Place:
John M. Parker Auditorium
Chairman: W. E. Anderson

9:00 A.M.—12:30 P.M.—
The Fumigation of a Building: J. Mandlebaum.

Rats and Mice: G. H. Lowery.

Rat Control: John Hogan.

1:00 P.M.—Luncheon.
Chairman: C. O. Eddy

2:00 P.M.—4:00 P.M.—
Ants, Bedbugs, Fleas, Roaches, Ticks.

Speakers: E. R. Barber, L. S. Bridges, I. J. Becnel, E. H. Floyd, O. W. Rosewall.

# Priorities—Shortages of Chemicals and Equipment

*By* WILLIAM O. BUETTNER, *Secretary, National Pest Control Association*

AN ARTICLE headed "Defense Priorities; What You as a Pest Control Operator Can Do To Minimize Their Impact on Yourself; Co-Operation of Entire Industry as a Unit Essential," appeared in the August, 1941, issue of Pests, pages 27-28. The article included a reprint of the National Pest Control Association "Informational Statistics" form which was to be filled in and returned so that proper compilation of the industry's chemical needs might be ascertained. The response was sufficient to bring into action the Office of Production Management so that a partial supply of sodium fluoride was made available. Where it was impossible to supply sufficient sodium fluoride, sodium silico fluoride was made available. At this writing the situation is not optimistic although with added co-operation which will be explained subsequently, efforts will be continued to assure the comparatively small quantity of sodium fluoride required by our industry which it is estimated is in the neighborhood of 4,000,000 pounds annually.

A further statement was issued via a membership service letter on October 27th:

### Sodium Fluoride—Sodium Silico Fluoride

In an attempt to explain the shortage of sodium fluoride and silico fluoride, the following facts are submitted for your consideration.

Previous to the present emergency a large quantity of these materials was imported from abroad. The amount imported plus the domestic production was enough to assure an adequate supply. It is of interest that the imported material was less expensive than that produced in this country.

Now that importation is practically impossible, domestic production alone serves as the source of supply. The defense program itself has created a great demand for these substances since they are used extensively in ceramic and glass manufacturing, metallurgical and related operations, in laundering, as well as in insecticides.

Sodium fluoride is made by treating fluorospar with sulphuric acid. The resulting product, hydrofluoric acid, is then treated with soda ash to get sodium fluoride. It should be emphasized that both soda ash and sulphuric acid are necessary in the production of chemical substances used directly in the manufacture of vital defense materials. Hydrofluoric acid itself is used in the production of aviation gasoline, stainless steel, metallurgical fluxes, and materials important in the purification of magnesium and aluminum.

Since the supply of sodium silico fluoride from Europe has been cut off, the domestic production has increased considerably. Practically all of the material produced in this country is a by-product of phosphate rock manufacture. While the supply of silico fluorides is tight, the situation is not critical. Present facilities are being rapidly expanded and it is believed that an adequate supply will be available in the near future.

The Chemical Section, Office of Production Management, is at present engaged in an exhaustive survey studying the possibilities of increases in production of both hydrofluoric acid and sodium fluoride. Much progress has already been made in expansion of available facilities and it is hoped that new plants will go into production in the near future.

We assure all firms of our industry that the study referred to has been made but the rapidly changing situations brought about by our entry into World War II calls for much revamping. There is one paramount job to be done and every last PCO is anxious to do his part to avenge for the dastardly stabbing in the back inflicted by the Japs at Pearl Harbor as well as to assure all peoples the security exemplified in what we commonly refer to as the American way of living. It follows also that any and all agencies or industries that have vital contributions to make to insure healthier conditions and to prevent damage to foodstuffs and necessities of life should function in consistent manner that will fit into the major objective. Time and again we have referred to our industry as the Second Line of Defense in Public Health as we cope with rats that not only are the carriers of disease and death but also ruin food and otherwise destroy commodities. And what is said of rats can be carried over to other insects that take their toll in destructive ways.

This brings us back to the need of gathering information and statistics so that consideration can be given in the long range preparations that must and will be made only as factual data is forthcoming. The National Pest Control Association is endeavoring to assist in this job. More recently in a forceful manner service letter No. 230 on December 5th said in part:

". . . Merely because you may have some sodium fluoride on hand and have been given what substantially amounts to a false sense of security as to future supplies, let it be emphasized that NOW is the time to prepare for the coming months. The facts in the case are that the sodium fluoride situation as well as other chemical shortages offer a pessimistic outlook. Our job is that of trying to arrange through official channels a method that will make these essential chemicals and other supplies available.

We have focussed our attention on sodium fluoride because we know that unless we produce statistics, little consideration will be given. For the most part the pest control firms are not supplied directly by the five principal sources of manufacture (two of these sources, it is estimated, provide our industry with 90% of our needs). In the main we purchase sodium fluoride through jobbers, distributors and chemical firms which also supply package goods manufacturers, etc. The same can be said of other chemicals but we would much prefer to concentrate our efforts on sodium fluoride to the end that we may be assured that our service work requirements will be supplied.

Regardless of what you have done in filling out or not filling out the "Informational Statistic" forms pre-

viously submitted, we ask that every pest control firm member of the Association fill out the attached form **(Reprinted in this issue for use by non-members of N.P.C.A. Ed.)** immediately so that we can appear before OPM and OPA to plead our case."

Before leaving sodium fluoride may we comment in passing that our attention has been called to comparatively unknown chemical houses (as far as our Industry is concerned) which have offered sodium fluoride at prices that not only are unreasonably high but which prices savor of racketeering. Where such advantages are being taken, we urge firms to communicate with the office of secretary (3019 Ft. Hamilton Parkway, Brooklyn, N. Y.) so that investigation can be started immediately. Insist at all times that you be told the source of these offerings and above all demand statements that substantiate the purity in terms of percentage the sodium fluoride content. It is not sufficient nor is good business sense shown when one accepts the air of mystery or semi-mystery that runs the gauntlet of "are you interested in buying a barrel of sodium fluoride? I haven't it myself but I know of one who has it, etc., etc." Beware of such offers.

Thallium sulphate and good red squill are difficult to obtain. Through the co-operation of the Predator and Rodent Control Division of the Fish and Wildlife Service of the U. S. Department of Interior the following information was released:

### Shortage of Toxic Agents for Use In the Control of Rats

Several inquiries have been received about some of the toxic agents used in the control of rats and mice. This is a serious situation at the present time due to the unsettled business conditions in those countries from which some of the poisons are obtained. It is not due so much to the transportation facilities as it is to the fact that suitable products are not being gathered or manufactured to ship.

The red squill shipments that are now being received should be bioassayed on their arrival because most of them being tested by our bioassay laboratories are found to be too low in toxicity to be used satisfactorily for the control of rats. The importers are making every effort to locate and bring in a satisfactory product. The shipments that test 700 mgs/kg. or stronger may be used but weaker squill should be fortified. Resulting from extensive research studies, a method of fortifying red squill powder has been developed so that a product of low toxicity, ranging from 800 mgs. to 2,000 mgs. per kilogram, can be fortified to a powder


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having a toxicity of 200 to 400 mgs/kgs. as desired. Weaker squill powder may be fortified but it will cost more to raise the toxicity to the desired point because more material would have to be handled, more solvent used and more labor involved in the processing. This method of fortification will soon be published. (It is expected that it will appear in the November issue of the American Pharmaceutical Journal.) We anticipate that it will not be long thereafter until it will be possible to obtain the fortified powder. In the meantime, it is well to purchase only lots of squill for which toxicity is known to be satisfactory.

This fortified powder will be more expensive, as would be expected, but it can be used in a weaker concentration in the bait than the original squill powder and at the same time produce both better acceptance and higher efficiency. It is hoped that this fortified powder will remove much of the uncertainty about squill and assure more uniform results with it in the control of rats. It may also improve the results with squill as a toxic agent for house mouse control.

Experiments are under way in a study to ascertain if the red squill bulbs can be successfully grown in this country. Preliminary results are encouraging but as it requires four or five years for the bulbs to reach the necessary size and age it will be some time yet before any definite information can be released about this possibility of helping the situation.

The shortage of thallium is also quite serious. The foreign supplies that were accumulated in this country before the present war situation in Europe developed, are now about exhausted and the domestic supply is not enough to meet the need. Recently we made inquiries of most of the mining companies in the United States and Canada and, with one exception, have found that there is either no thallium present or in such minute quantities (0.01%) that recovery of it is not feasible. The only mines in the United States producing thallium in sufficiently high percentages are those belonging to the American Smelting and Refining Company in Utah, which yield 1500 to 2000 pounds annually. The thallium is found in association with cadmium materials. One state in rodent control operations requires more than this amount. An effort is being made to locate thallium in some of the mines in Central and South America.

Micronized arsenic is proving to be effective in rat control but the difficulty is to obtain this product because it is a specially pulverized form of the regular U.S.P. white arsenic (arsenic trioxide). Only one manufacturer at present can prepare this material and then only when there is a large order of 25,000 pounds or more. An effort is being made to correct this situation whereby it is hoped that a definite source of supply may be provided.

There is no serious shortage for the other toxic agents used in the operation for the control of rats and mice.

Substances with chlorine content are becoming more and more difficult to obtain. Equipment such as electric sprayers and powder bellows fall into the category of shortages.

Withal two important facts should be emphasized; namely, do not attempt to hoard and when possible use substitutes. Reliable chemical and supply houses know your needs and are co-operating to procure those needs. Continue to confer with your normal sources of supply in that your chances of obtaining necessary chemicals and equipment are more likely to be had through reputable firms with whom you have been doing business.

We can only reiterate that as co-operation is given by all firms throughout the pest control industry in filling in the following form, the greater are the possibilities of procurement. Above all do we want to emphasize in conclusion that the information furnished on these forms will be kept in strictest confidence and **used only in your own best interests.** We need only to point to what was done for 46 firms in one area who were given preference because they had co-operated by filling in the previous forms and at least obtained sodium silico fluoride.

Act promptly by filling in the form below:

### Informational Statistics

Date.....

After filling in the following information, return to William O. Buettner, Secretary, 3019 Fort Hamilton Parkway, Brooklyn, N. Y. In submitting figures be sure **to specify figures that will be clearly understood IN TERMS OF POUNDS, ETC.**

1. How many pounds of sodium fluoride do you need? If you have sufficient on hand for your needs in any of the following months merely indicate by inserting the word "sufficient."

In January, 1942 . . .....
In February, 1942 . .....
In March, 1942 . . . .....
In April, 1942 . . . . .....
In May, 1942 . . . . .....
In June, 1942 . . . . .....

2. From whom do you normally purchase your sodium fluoride? (This is important in that we hope to have your NEEDS supplied through regular channels.)

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3. What other chemicals are you finding difficult to obtain? (Indicate how much is required for the period January-June, 1942.)

.....
.....
.....
.....

Name of Firm.....

By..... Title.....

City and State.....

.....

### LAST MINUTE FLASH

In Victory, December 16th there appeared the following:

#### A-10 Preference Available To Producers of Insecticides, Germicides, Fungicides

Manufacturers of insecticides, germicides, and fungicides are granted priority assistance in obtaining scarce materials by Preference Rating Order P-87, issued December 13 by the Division of Priorities.

The Department of Agriculture has reported that farmers, dairymen and others are finding it difficult or impossible to obtain an adequate supply of germicides, insecticides, and fungicides. The December 13 order gives priority assistance to manufacturers of such materials in order to provide adequate quantities to prevent deterioration or diminution of the nation's food and seed supply.

Priority assistance under the order may be obtained by 70 specified manufacturers who have been so notified. Other manufacturers may be added to the list from time to time.

### Information Required

Before becoming eligible for priority assistance under the terms of the order, a manufacturer must execute an acceptance of the order and furnish certain information to the Priorities Division on Form PD-82, including his estimated materials requirements for the calendar quarter beginning January 1, 1942. Use of a priority rating of A-10 will then be assigned by the Director of Priorities for specified quantities of materials to be obtained during a three-month period by each individual manufacturer.

Insecticides, germicides, and fungicides are defined in the order as chemicals or mixtures of chemicals to be used for the following purposes, provided they are in connection with the production of food:

1. Spraying, dipping, dusting or fumigating domestic animals, seeds, tubers and bulbs, growing plants, stored products and buildings for the purpose of controlling destructive insects, fungi and bacteria.

2. Disinfecting soil, farm buildings, dairy implements and machinery, cattle and poultry cars.

Pest control firms should read this very carefully in that it will be observed that insecticides, germicides and fungicides are to receive the preferential rating but only insofar as the purpose of these chemical substances is covered by "provided they are in connection with the production of food." The National Pest Control Association has been in conference with the Office of Production Management to have the pest control service industry included in that for the most part our services have to do with the elimination and control of pests in homes, apartments, industrial plants where there may not necessarily be production of food, hospitals, hotels, stores, places of public assemblage, etc. As an industry we cannot conceive that a more important work is being done than keeping premises free of vermin and thus maintain proper health standards, prevent deaths, conserve many materials and otherwise protect the very premises in which dwell our citizens who are expected to produce.

To be sure, our food supplies must be preserved but the Preference Rating Order P-87 appears to concern itself almost entirely with the "production of food," but what of the food that has been produced, the homes that should be protected, and many institutions that must be kept free of pests? A ruling is being waited. Will not the time soon come perhaps when the government may even consider preempting men from the ranks of pest control firms for duties in other industries and in part such duties will have to do with vermin and rodent control.

## Elizabeth Rat Hunters Imperil Landing Planes

Rat hunting in the Elizabeth (N. J.) dumps must stop because of aviation.

That was decreed by the Board of Public Works as the result of complaints by airplane pilots who use the Newark airport. Pilots complained that fires in the dumps caused dense smoke clouds which obscured their vision while landing at Newark Airport when the wind was from the south. Rat hunters started the fires to smoke their quarry out. —*N. Y. Sun.*

### WINS BEETLE TRAPPING PRIZE

Stratford, Conn.—Frank Purechek, champion Japanese beetle trapper, was paid off for his efforts at a rate of three-hundredths of a cent a beetle. He trapped twenty-five quarts of the insects for the Stratford Garden Club's first prize. At 6,000 beetles a quart, that's 150,000 beetles. All contestants turned in 159 quarts.

—*New York Sun.*


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# Desirable Training for Those Planning to Enter Commercial Fields of Entomology

*By* J. J. DAVIS, *Purdue University*

IT IS my understanding the assignment given me refers to all commercial fields of entomology, other than the field of research with commercial organizations. Therefore, I will include in my remarks the two major fields of commercial entomology—service entomology, which includes the commercial pest control operator and consultant, and industrial entomology, which includes the sales promotion and contact service of insecticide manufacturers and distributors. Each will be discussed separately, although to a considerable extent the desirable education required by each is not greatly different. Perhaps the greatest difference in these two fields is in **training.** Speaking of training, may I digress for a moment. In a mimeographed statement, A. B. Graham of the Extension Service of the U. S. Department of Agriculture, distinguishes between Teaching, Instructing, and Training, as follows:

**Teaching:** "Teaching is setting up conditions within the mind which enable the learner to make a change in his process of thinking or acting."

**Instructing.** "Instructing is simply the presentation of information or directions as to procedure, such as directions for building a self-feeder or a recipe for making spray mixture."

**Training.** "Training is the development of skill either in thought or action."

Let us first consider the pest control operator, heretofore known best as an exterminator. Before discussing the desirable education for the pest control operator we should say a word regarding his work, or perhaps his goal, in order that we may better evaluate the educational requirements.

The name Pest Control Operator, or the initial letters PCO which might be a designation comparable to CPA (Certified Public Accountant), usually refers to those commercially engaged in the control of pests, both animal and vegetable, which are obnoxious to man or destructive to structures or their contents. It is true the term Pest Control Operator might also refer to one commercially engaged in the control of pests of trees, shrubs, or other growing crops, or animal pests of any kind occurring under any condition. However, the name is generally understood to include a person as first defined. For the purposes of this discussion we will refer to the generally accepted usage, although the training would not be greatly different for one engaged in any type of commercial pest control.

The pest control operator must diagnose and analyze situations and draw logical conclusions, which call for a good understanding of the entire field of entomology and knowledge which will enable him to identify insects, especially those which commonly occur in or about the home, as well as have a knowledge of their life histories and habits, ecological relationships and structure. He must be able to determine the sources of infestations, factors responsible, and apply the remedies according to the conditions prevailing. In other words, there is no stereotyped remedy for each pest, and he will need to depend on his knowledge of each pest as it reacts under varying conditions in order to plan the treatment. In his business he will encounter some botanical problems, such as wood rots, which will call for an understanding of plant pathology. Likewise, there are vertebrate pests, such as rats, mice, squirrels, sparrows, and starlings, which must be considered. Many of his chemical controls he may need to compound himself, and therefore his success may often depend to a major degree on his knowledge of chemistry.

The pest control operator must be able to meet with business and technical men, as well as the average citizen or householder to understand new developments and to intelligently and successfully sell his service. This calls for a broad education, with emphasis on subjects which will develop personality, speech and salesmanship. Pest Control is a business which calls for ability to conduct the enterprise by standard business methods, requiring training along these lines.

From the above brief statements, telling of the work of the pest control operator, we will attempt to outline a general curriculum which will meet his needs.

The Pest Control Operator should have, above all else, a broad education, and, as I see it, it will be just as important in the not distant future for the professional operator to have a college education, as it is now necessary for special training beyond the high school for the pharmacist, attorney, or dentist—professions which once were acquired largely through apprenticeships.

In the field of Entomology, courses should include a thorough understanding of the economic importance of insects and the many ways they affect man; external and internal morphology, with special emphasis on their relation to control; classification; insect bionomics, including insect ecology; and fundamentals of control, as well as the specific controls. A complete understanding of literature, entomological associations, and state and federal entomological and related organizations, is highly desirable. For the commercial operator who provides a service, it is especially important that he have practical experience, i. e., training in applying his learning. This can be obtained in part by having different operators of known ability and standing come to the campus from time to time as itinerate instructors. In general, it is advisable also for the student to have training with a reputable pest control operator during the summer preceding graduation, and this to be followed after graduation with an apprenticeship with a commercial operator.

Technical subjects other than Entomology which should be a part of the training include Plant Pathology, Bacteriology, perhaps Pharmacology and Toxicology, and above all Chemistry. Chemistry next to Entomology should be given most attention, with special reference to Or-

ganic Chemistry. In other words, six 3-hour semester courses in Chemistry, a total of 18 semester hours, should be provided, in comparison to eight 3-hour semester courses in Entomology, a total of 24 semester hours. Thus Entomology and Chemistry will require nearly one-third of the required work in a four-year college course.

For reasons already stated or inferred, the following lines of study, other than those having a general broadening educational value, are important.

Personality and salesmanship are perhaps almost as essential to success in the pest control industry as technical knowledge, and therefore courses in psychology, philosophy, speech and salesmanship are definitely advantageous.

Written expressions are essential for correspondence and advertising, which call for a thorough course or courses in English and Composition.

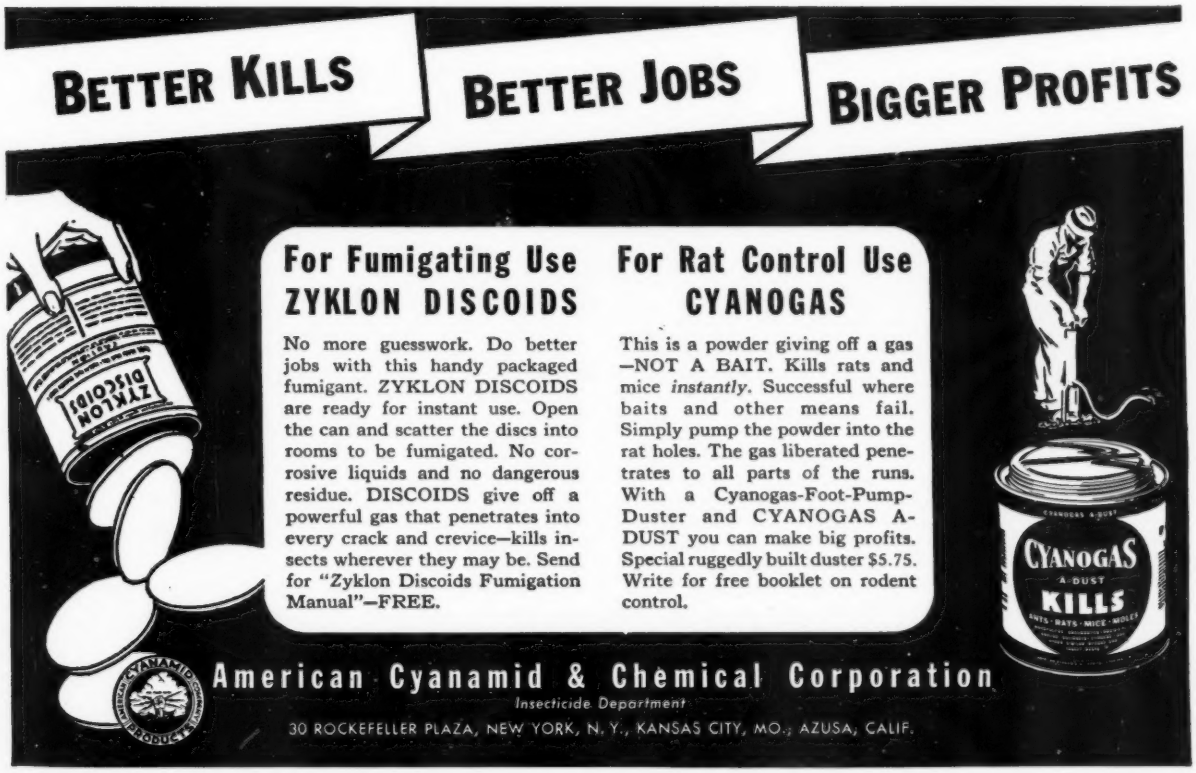
Business administration is of greatest importance, whether the business is large or small, and in this connection cost-accounting cannot be overlooked. Thus we feel that any courses, such as Economics, Advertising, Cost-Accounting, Bookkeeping, and Business Law that can be acquired, are highly desirable.

The Industrial Entomologist, already defined as one connected with industry who promotes insect control through sales promotion and contact service, deals with all types of insect problems, and therefore his training calls for an understanding of agriculture in its broadest sense, in addition to the requirements of the commercial pest control operator, already discussed.

After all, the student entering college seldom knows whether or not he wishes to major in Entomology, let alone which branch he prefers. In my opinion, a good foundation, in the subjects I have tried to suggest for the pest control operator, should be sufficient introductory learning if the graduate has the personality and desire for the entomological career he finally accepts.

There is one final comment I would like to bring out. I refer to the duty of the teacher in recommending and placing his graduates. I believe, in concluding, I can do no better than quote a paragraph from my presidential address last year, which reads as follows:

"There is another obligation which the teacher should never forget. I refer to endorsements he may give his students. Because a student has received good grades and, let us say, shown promise in research, is no sign he will succeed as an extension worker or in the commercial field. Let us think of the pest control operator, or exterminator, as he has been commonly referred to in the past. The better pest control operators recognize the need of more training in technical entomology than most of them have received and some have employed men who have completed a major in the subject. Unfortunately not a few of the men employed have proved unequipped for such work, in spite of high endorsements. Consequently their employers have come to the conclusion that entomologically trained men are not qualified for the practical work of pest control. This is very unfortunate because we believe the commercial field of pest control is an important industry in which more well-trained entomologists should participate. In other words, we wish to leave with the teacher the thought that there is a variety of fields in entomology, suited for an equal variety of human personalities, and that recommendation be made on the basis of qualifications for the type of work as well as qualifications in entomology."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# Public Health and Pests

*By* J. C. GEIGER *and* A. B. CROWLEY, *Department of Public Health, San Francisco*

IT IS sometimes difficult to prepare an article on many problems of public health. Ofttimes the subject requested by citizens and organizations is far afield from the activities of the public health official. Pests, pest control, and public health, however, do have a common ground and certain portions of the work in these fields are of official concern. Therefore, the closer association of commercial pest control operators and public health authorities is quite desirable.

Ordinarily the average citizen does not consider the great number of pests that interfere each day in the normal routine of life. Most individuals consider only those pests that actually cause discomfort to their person, damage or inconvenience in their homes; while others consider the pests of the garden the one thing in the world that disturbs their equilibrium.

Little or no consideration is given by the residents of large cities to the economical situation of agricultural pests as it applies to the foodstuffs they purchase each day. Nor do they consider the enormous losses as a result of pests in food supplies within their communities, the financial burden of which they eventually must carry in its entirety.

For that reason it is my intention to confine this article to pests, pest control and their relation to the public health activities of a large city and, more specifically, as this relationship exists in San Francisco.

Primarily the health officer is interested in those rodents or pests that are directly or indirectly involved in the transmission of disease to man. Among these there should be mentioned the rat, mouse, flea, tick, louse, bedbug, mosquito, snail and fly. Other pests that disturb the equanimity of the community, and in turn that of the health official, are ants, bees, beetles, crickets, earwigs, hornets, moths, roaches, silverfish, skunks, sparrows, seagulls, spiders, termites, wasps and weevils. There are other pests, such as mites and flukes that are parasitic to animals and fish, that do cause illness in man but these are of little or no concern to the pest control operator.

Of the disease-bearing group, the rat is probably the most important. The rat population in a city of the size and location of San Francisco is normally of such magnitude as to require constant vigilance on the part of property owners and health officials.

Too frequently there is found heavy infestations in property that has been adequately rat-proofed but careless accumulations of refuse and debris will afford excellent harboring places. Furthermore, failure to maintain the rat-proofing in good state of repair and other negligent pratices such as allowing street and basement doors to remain open, etc., permit ready access for rodents. It is indeed unfortunate that the general public do not realize the economic benefits in food supplies alone to be derived from good rat-proofing and proper rodent control through extermination activities.

The average citizen is of the opinion that it is the duty of the Health Department to keep premises free of rodents and in many instances unreasonable demands are made upon public officials. In San Francisco the laws on rat-proofing and rat control are very specific and definitely place the responsibility upon the property owner. It is true, however, that for over thirty years San Francisco has maintained a force of rat catchers whose duties are to trap rats for examination in relation to plague. This work is carried on in conjunction with the United States Public Health Service, which service maintains a local laboratory for plague suppressive measures. It was never intended to use this force to rid private premises of rodents, although their services are used to a limited extent in assisting on premises where large infestations occur. Aside from being repulsive, dirty and damaging, the rat is a definite potential public health hazard at all times.

Of all the diseases transmissible to man from the rat or its parasitic associate, the flea, bubonic plague is probably the most discussed. Caution is always advisable when handling dead rodents in order to avoid infected fleas. Aside from plague, the rat is definitely involved in the perpetuation of certain portions of the cycle responsible for the transmission of trichinosis from the hog to man. Weil's disease (spirochaetosis ictero haemorrhagica), acute infectious jaundice, or more commonly called sewer workers' disease, is transmissible to man through contact with rat urine. Other illnesses may be caused by the rat because of insanitary habitats and the resulting possible mechanical transmission of disease to the food supply. Rat-bite fever and skin irritations from rat mites are also a source of illness or annoyance to man.

The mouse is another common pest that causes considerable damage to man's abode and food supply. The mouse, like the rat, befouls premises and food with its excretia, causing food contamination and poisoning with organisms such as B. paratyphosus, B. of which the mouse is known to be a prolific carrier. Trapping of mice within premises is a comparatively simple procedure when common sense and patience are exercised. Unfortunately some of the public in large cities seem woefully lacking in both and would like to depend upon public agencies for such services.

The flea, especially certain types, is closely associated with the rat in the transmission of bubonic plague. In climates similar to that of California the flea seems to breed most favorably. Consequently visitors seem to feel that the flea is a native of the particular community that is favored with such climates. This is especially true if the visitor is hypersensitive to the bite of the flea. Some individuals seem to be entirely immune to the bite of fleas and other insects, while others experience serious discomfort and sometimes illness from infections due to scratching and irritation of the skin. Good housekeeping, the use of the vacuum cleaner and proper care of domestic animals will assist in keeping flea nuisances at a minimum. Proper janitorial services in places of public assemblage are an absolute necessity to protect patrons from fleas.

Often the Health Department is called upon to investigate heavy flea infestations in private homes. Invariably our inspectors find a badly neglected pet whose abode is a nest, or carpets that have received little or no cleaning over a period of years.

It would seem that in such cases, someone would have exercised better judgment and taken sufficient interest to at least try to rid the premises of the pest before calling upon a public agency for assistance. When occupied premises are found to be badly infested with fleas it is a sign of neglect, carelessness, laziness or ignorance.

The mosquito is an annoying and quite often a dangerous pest and is the subject of many complaints in San Francisco. Thousands of complaints are registered each year and our inspection forces devote a great deal of time to ascertaining the breeding areas. Those most commonly found are catch basins, roof drains, sewage sumps, containers partly filled with water such as vases, tin cans and bottles, fish ponds and other pools of water. When adult mosquitoes are noticed within a dwelling, occupants should immediately search their premises for impounded water. When certain that their own premises are free of favorable breeding places they should then call the Health Department for inspection of surrounding neighborhood. Abatement is accomplished by oiling, draining, filling and stocking fish ponds with surface-feeding minnows or special types.

An amusing incident occurred in the San Francisco Opera House a few years ago. Opening night, which is always a gala social event, was a sellout. Among the distinguished audience were many prominent City officials, and much to their chagrin the house was full of mosquitoes. Low necks, backless and sleeveless gowns were the rule rather than the exception among the ladies of the cast and audience. The amount of squirming, slapping and scratching that was going on in accompaniment to the opera and the singing of the mosquitoes was surprising. The following day the Health Department received numerous requests for an immediate investigation. Inspectors found two large sewage sumps in the basement that had been allowed to remain partly full of water during the off-season while the Opera House was closed. Mosquitoes had been breeding therein for several months and had been flying out by the hundreds from vent holes in manhole covers. Needless to say, this was permanently rectified.

The modern art of hitch hiking has been adopted by the mosquito, in spite of the fact that he must use a wing instead of a thumb. Adult mosquitoes have been transported in considerable numbers from one area to another by automobiles, especially trucks, and even from one country to another by the aeroplane. Health inspectors in this city have found automobiles in private garages infested after weekend trips to suburban, mosquito-breeding areas. Strangely enough these inspections were prompted by the owners' complaint of mosquitoes in the house during the night.

To the direct reference to the association of fleas with plague and to Anopheles mosquitoes with malaria there must be recalled the matter of the so-called biological control. This method of control assumes two types, namely, that of natural enemies of the pest or insect, and the uncertain but unfavorable effect of the disease-infection on the host itself. In other words, the spread of disease by pest or insect host may be governed in nature by characteristics of the insect because of inimical environment, as the high salt content or unusual hydrogen-ion concentration of the water of the breeding area; by volumetric infection of the host with the disease thereby causing death of the host; and finally by enemies, as for


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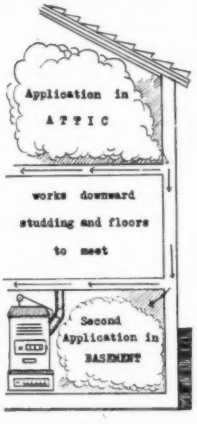


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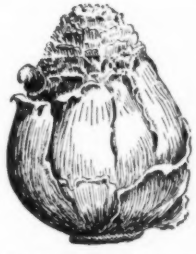

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instance the mosquito vector by top-feeding minnows of the Gambusia variety. These naturalistic control measures are real acts of God and quite often can be utilized for the benefit of mankind. The mosquito is capable of transmitting yellow fever and malaria.

Body and head lice are repulsive pests that most people are reluctant to admit having on their person in spite of the fact that they are usually the victims of the carelessness of some other unhygienic individual. Ofttimes serious arguments and ill feelings develop between the school or health department and parents when the latter's child or children are sent home from school with a polite note informing them that there are small grayish specks in their hair resembling dandruff except that they are motile, and requesting that something be done to correct the condition.

Lice are particularly involved in the transmission of typhus fever to humans. A recent incident in the Health Department should be of interest. A representative of a commercial pest control company telephoned the Department and wanted to know if certain chemicals and procedure would effectively remove body lice from an apartment house and, more particularly, from the person and clothing of the manager. Thorough discussion and careful questioning by the health inspector brought out the fact that the manager was completely infested from head to foot and that a friend of a friend, etc., had given information to the effect that the use of certain chemicals, all of which, by the way, were deadly poisons, would get rid of the pests. The inspector stated that it would be dangerous to allow such an individual to handle these poisons and for the manager to see his family physician for further advice and allow the pest control operator to clean up the premises.

It is almost unbelievable, but there have been occasions when patients have been brought into our emergency hospitals so infested with lice that it has been necessary to delouse the ambulance, hospital and personnel. The relief problem, so prevalent in cities in these United States in the past few years, has definitely shown the need for delousing or bath stations, especially for the single man on relief. That the official relief agencies have not satisfactorily met this problem is obvious to many health officials. Undoubtedly such stations should be an accepted procedure of the local official relief agency.

Ticks, bedbugs and flies do not seem to be a serious source of annoyance to the residents of San Francisco, as very few complaints are received. They are, however, potential public health hazards.

Although most of the insect pests thus far referred to are capable of transmitting certain diseases to humans there are seen very few cases of concomitant illnesses in San Francisco. Whenever a cause does occur, the Health Department uses every force available to determine the source of infection. It is only through such diligent efforts that it is possible to keep informed of the hazardous potentialities of our resident insect colonies.

The remaining group, namely, ants, bees, beetles, crickets, earwigs, hornets, moths, roaches, silverfish, skunks, sparrows, seagulls, spiders, termites, wasps and weevils, are of little if any public health significance. They are nevertheless a constant source of annoyance to public health officials. Again, the public seems to think that they are rightfully entitled to inspection of premises and extermination services.

The constant wail of the public, "Doctor, I have bees"—"Doctor, I have moths"—"I have spiders—termites—skunks, etc.," is sometimes amusing but time-consuming because it is doubtful if there is an employee of the Health Department that is not bothered with the same problem and proceeds to eliminate the nuisance by exercising a little common sense and some exertion.

In this respect a problem arose in the rear of my own home. One evening there was noticed a pretty black and white odoriferous kitty in the garden. She seemed quite sure of herself and was mistress of all she surveyed. A short time later she was seen emerging from a small cave under the foundation of the house and was followed by five little kittens. They evidently had decided to take over the premises and settle down to the serious business of raising a family. The combined efforts of health inspectors, pound master and even the police eventually eradicated the family but not without several close calls and much unusual odor in the district.

Departments of health cannot expect to completely annihilate all the insect and rodent pests in the world but there is a desirable goal of an irreducible minimum. The combined cooperative efforts of commercial pest control operators, public health officials, and the public will do much towards attaining this goal. The public must, however, be educated so that they may know what public services they are properly entitled to and what their responsibility is in relation to pest control. Some property owners and business organizations recognize the need and value of proper pest control and arrange for it accordingly. Others call for such aid only when health authorities are pressing them and only then as a temporary expedient. Still others call for service once and expect a lifetime guarantee.

Much more could be said of the relationship of commercial pest control operations and public health activities but a fitting conclusion is that health officials welcome cooperation with the pest control operators. There appears to be no doubt that many operators are definitely interested in improving conditions in the community by the extermination of insect pests and rodents. May it be emphasized that such operators are a community asset.

## "Termite" Now Barks at All Trunks

Gloom descended over the home of Jerry Vinkemulder, president of the Grand Rapids chapter of the National Aeronautical association and Grand Rapids PCO, the other day.

Termite, the Vinkemulder's brown and white collie, was missing.

Little six-year-old Abbie Vinkemulder's eyes were red from an overflow of tears. Termite was her pet.

Her mother combed the neighborhood for the missing dog, and the only news she gleaned from neighbors was bad news. A woman said she had seen a dog get hit by a car. She thought it was Termite. The garbage truck had passed by and had picked up the remains, she said.

The woe became even greater at the Vinkemulders.

Before the report of the neighbor came in, Jerry had left on a planned hunting trip with his brother. At the time of his departure the disappearance of Termite was alarming.

Returning the next day with the brother, Bernard Vinkemulder, he commented: "Termite was missing yesterday when we left. I hope he's back home when we get there.

Bernard Vinkemulder suddenly stopped the car, got out and unlocked and lifted the lid of the trunk. Out jumped a hungry Termite.

Bernard explained that on the previous morning Termite had followed him home from Jerry's house. He said he put the dog in the trunk, intending to drop him off at Jerry's house when he picked up Jerry. In the excitement of going hunting, he forgot about the dog.

—*Grand Rapids Herald.*

No one ever built a successful enterprise by being impatient with subordinates.

# Methyl Bromide Unsuccessful as Grain Fumigant in Elevator Bins

R. T. Cotton, George B. Wagner, and T. F. Winburn, Manhattan, Kans., laboratory, Bureau of Entomology and Plant Quarantine, report that the fumigation of stored grain in elevator bins with methyl bromide has not proved successful, although several methods of applying the fumigant have been tested.

One method of application consisted of introducing the liquid through a ½-inch metal pipe running from top to bottom in the center of a bin 80 feet deep, supplied with openings at every 10 feet of depth. A second method consisted of applying the entire dosage at the top of the bin, but just below the surface of the grain. The third method consisted of introducing the fumigant in 1-pound cans that were tossed into the grain stream as the bin was being filled. Although dosages up to 3 pounds per 1,000 bushels of grain were applied, the kill of insects was incomplete in all cases.

To overcome difficulties of distribution due to the low boiling point of methyl bromide, arrangements were made to obtain a 15 per cent mixture of methyl bromide in the commonly used ethylene dichloride-carbon tetrachloride mixture. Preliminary tests made with this mixture in bins of shelled corn containing 2,000 bushels, indicated that a dosage of 1½ gallons per 1,000 bushels applied to the surface gave excellent results.

## Insects and Infantile Paralysis

"A report of definite evidence that flies carry the virus of infantile paralysis was submitted at the recent convention of the American Public Health Association held in Atlantic City. News stories of this report went out over all the leading wire services and were probably carried in about every newspaper in the nation. All this goes to emphasize once more the deadly disease carrying habits of insects, not only flies, but all insects, and it likewise focuses attention on the important place of insecticides in controlling these insects.

## Salt-Marsh Mosquito in Illinois

During the latter part of the summer we had a severe outbreak of the salt-marsh mosquito, **Aedes solicitans.** This occurred mainly in Marion County, but extended somewhat to adjoining counties. The mosquitoes were apparently breeding in the salt water which had accumulated from oil wells. We have had previous trouble with the same species, which was first found by S. C. Chandler in Jackson, Union and Saline counties, Illinois, in about 1924-26. The mosquitoes were found breeding in considerable numbers at that time in the salt water which accumulated around salt springs or salt wells. There are a number of these salt wells in that section of Illinois. They were used extensively by the early settlers as a source of supply of salt. Apparently the mosquitoes have been breeding in these salt springs or ponds for a long time—probably long before this country was settled by the white man. How they got there we do not know. Probably the increase in salty water, occasioned by the opening of the oil fields, has given them an opportunity to increase and was the primary cause of the outbreak this year.

## When Cat Isn't Away

Oswego, N. Y.—So bothered by mice were men at Fort Ontario that officers brought in a cat. But the mice continued to ruin army records and other papers and the mice seemed to be more numerous than ever. One night the officers investigated. They found the cat playing with the mice.


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# The Inter-Workings of a Pest Control Business

By FRED SWITZER, *Western Exterminator Company, Los Angeles, California*

EDITOR'S NOTE: *At the Ninth Annual Convention of the National Pest Control Association held in San Francisco, Calif., October 27-29, one of the general themes was "Business Practices of Our Profession." In a series of papers on this theme, Mr. Switzer read the following paper:*

---

THE subject "The Inter-Workings of the Pest Control Industry," may perhaps best be covered by recalling some individual experiences.

However, to start at the beginning, I'll take the subject of **Personnel:** We believe that a good service man is not easy to find. We require in a man: good manners—the ability to meet people and make them like him—neatness—and of course the willingness to work and work hard. Perhaps I should mention a **"flexible nature"** as being of paramount importance, because of **all** industries, ours is one of the hardest to regiment and reduce to any specific plan. We have found it difficult to make definite rules for our men. Every job requires individual attention, and a man must have initiative to be able to go ahead and not demand instructions.

The pest control industry is unusual in that we have nothing to sell but service; therefore, the operator holds a strategic position. A concern selling a commodity stands or falls on the merit of its product; whereas our business stands or falls according to the ability of our employees and officers.

I'll next mention the office force, which includes such secretaries, bookkeepers, etc. as may be required. An important position in the office is that of the switchboard operator, and we fortunately have a good one. A sensible answer and quick thinking on her part can save us endless grief. Of course we have our stock-room clerk—our salesmen—our laboratory man and an assortment of bosses.

Now as to procedure. Let's take a specific case, and call her Mrs. Jones. She either calls us on the phone because she has seen one of our ads, or one of our super-salesmen has gotten ahold of her; and soon Mrs. Jones finds herself the owner of a carbon copy of one of our agreements. She finds that for a nominal sum she is now protected against the invasion of ants, rats, mice, roaches, waterbeetles, silverfish and moths.

We file this agreement, after having made three cards and a work-order. The work-order is made first and placed on a clip for the attention of our clean-out department. It describes the property—the type of service to be rendered — when the work is to start — and any remarks.

A clean-out man goes to Mrs. Jones' with his equipment, and she receives her first **or** clean-out services.

The Clean-Out Department returns the work-order to the office, signed by the man responsible for the job; and this work-order is clipped to the agreement. Then, our stenographer makes these various cards, which I have shown you. This **large** card is put in **this** folder, which in turn is put in a tray which holds all the jobs recently done by the aforementioned clean-out man. He now has his record of Mrs. Jones' account; and he keeps this card until he deems her home to be free of pests and ready to be turned over to a route operator. He then "pulls" the card and it is filed in a tray belonging to this route operator, who, henceforth, will take care of the account.

We have the city divided into fourteen districts, and each one of our operators, except the clean-out men, services a specific district.

A small card is placed in a file at the telephone operator's desk, and is a cross-index system, being filed according to street address.

### Of Mice and Women

**Nowata, Okla.—Dorothy MeGee, Frances Deen and Mrs. Marie Liston received a small package addressed to all three at the county agent's office where they work. They opened it.**

**Three mice leaped out.**

If Mrs. Jones' home requires twice-a-month service, she gets a green **tab** on her card—if once-a-month, yellow —once-aweek, red. Each time the operator calls on Mrs. Jones, he marks the date of service on the card and **moves** the tab to the right, showing at a glance, that the stop has been serviced.

He also has Mrs. Jones sign a slip. She receives a duplicate copy and the original is filed in the office. The slip gives the date — the operator's name — tells how much material was used—and how much time he spent on the call.

We will say Mrs. Jones receives ordinarily, service once-a-month — but if necessary, of course, we will call more often, and she is at liberty to call us at any time—and we try to answer each complaint call promptly.

Our men are instructed to call in at least three times daily — at 11 A.M., 1 P.M. and 4 P.M.; thus, if we receive a complaint our customer is assured of a quick response. Our telephone operator calls back and verifies any serious complaint.

Cancellations are always acknowledged by a letter expressing our appreciation for their past patronage and reminding them that we hope to be of service to them again.

One of our biggest headaches is Mrs. Smith, who decides she can't afford our blanket service covering the control of these various pests, but she **does** want ant control, so she signs for ants only.

Within a week, Mrs. Smith calls and says she wants our man right away. He goes, and finds Mrs. Smith has **mice,** and will he please do something. He does.

Next week, she calls again, and wants him to spray one closet for moths. He is a good-natured fellow—and does. This becomes more or less of a habit with Mrs. Smith, but we try to be agreeable, and things go on. Later Mrs. Smith discovers a sweater with a moth-hole in it. She hits the roof—grabs the phone and tells us to discontinue the service immediately!?

We remind her that the agreement is really only for ants, but she only

sputters and says, "Do you mean to say that for the price I pay, I only get service for **ants**?"

She has forgotten our original conversation, and we can only smile and tell her how sorry we are for the "misunderstanding."

This, of course, is only one case, or rather two cases—Mrs. Jones and Mrs. Smith.

Besides private homes, we take care of restaurants, apartment houses, hotels, clubs, hospitals, markets, office buildings, factories of all kinds, flop houses, ranches, beer-joints—and what have you. If you want an education—be a pest control operator!!

We are called to control ants, mice, roaches, beetles, rats, silverfish, moths, sow-bugs, bedbugs, snails, gophers, fleas, mosquitoes, flies, frogs, lizzards and an occasional snake . . . we will also help "move furniture" and everything but mind the baby—it's lots of fun.

I believe this covers the interworkings of one pest control company—and I don't feel that I should bore you any longer; however, if you have any questions, I'll gladly answer them.

## Odd Ways That Modern Pied Pipers Get Rid of Rats

The Pied Piper of Hamelin had nothing on the farmers of Massachusetts, for without pomp, ceremony or one piped note of weird music they lure their rat pests to a watery doom.

The trick is simple. Although it is traditionally the elephant who never forgets, once a rat finds out where to get a tasty meal he can find his way back time and again and he brings all the family with him including his uncles and his cousins and his aunts.

So the rat-killing New England farmers (maybe they do it out in Kansas and other places, too) just fill up some steel barrels to within one foot of the top with feed. They obligingly put a board up against the side of the barrel to make it easy for the rats to get a square meal. There's no catch to this—yet.

Soon the rats are so used to their handy barrel dinner that they scurry right up the plank and nose-dive in without a single look-before-they-leap. This training period takes only a few days and after that the feed is taken out and the barrel is filled with water, with just a bit of floating mash on top as a blind.

It doesn't take a Pied Piper to figure out what happens. Rats dash up to dine and remain to die by drowning.

This is only one of the tricks being used by the Massachusetts farmers, who set aside one week each year for waging war on rats to keep them from moving into winter quarters in feed-rooms, poultry houses, barns, sheds and even homes where, during the cold months, they can do an incredible amount of destruction.

But not everyone has a water barrel and some people like other kinds of rat traps better. These potential rat exterminators are not so deluded that they believe "rat" cheese is the best kind of bait. Tests show that rats prefer hamburg steak, peanut butter, bananas, sweet chocolate or raw eggs. Or they may nibble at fish, rolled oats, cornmeal or sliced tomato. Add to these foods a little red squill poison and a trap is unnecessary. Just scatter the poisoned bait in their paths.

This red squill poison can be obtained from any county agricultural agent and 50 cents worth is enough to kill all the rats on the farm.

Even one pair of rats can do a lot of damage before the year is out because they may have as many as 120 babies in that time. Every year, says the United States Fish and Wildlife Service, rats destroy as much food as 20,000 farmers can produce.

Another New England trick for catching rats was used by Mr. George Steele, a clam-digger of Sebasco, Maine. When the big shore rats infested his big pile of clam shells for bits of meat, Mr. Steel took 25 or 30 giant clams and put them in a row near low-tide mark. The hungry rats would stick their snouts inside the opened shells, the alert clams instantly shut the shells and the rats' noses were caught fast. No amount of struggling got them free, and the incoming tide drowned the trapped rodents.

—*American Weekly.*


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# Tests on Crawling Insects

## *Evaluating Liquid Household Insecticides Against the German Cockroach and Bedbug—A Final Report* on Research Project at Ohio State University*

*By* F. L. CAMPBELL, C. S. BARNHART *and* J. M. HUTZEL, *Ohio State University*

## PART III

### Chamber Method

For reasons to be mentioned and discussed later, it was felt that the lard can method might not appeal to the Insecticide Scientific Committee of the N.A.I.D.M., except as a measure of the relative driveout properties of different insecticides. Therefore Hutzel developed a method that ignores driveout but emphasizes the effect of direct spray and makes use of a Peet-Grady chamber and atomizer — equipment now available in most testing laboratories. The principle of the chamber method is to drive a cone of spray upon a series of insect containers so placed with respect to the spray cone that the dose of spray received by each container progressively diminishes from the center outward. One application of spray thereby delivers upon each group of insects a different average dose of insecticide, which may range, according to the set-up, from a dose that kills all the insects to one that kills none. This is the situation in the practical control of crawling insects with liquid insecticides, where the degree of control depends on the location of the insects with respect to the spray as well as upon the potency of the insecticide.

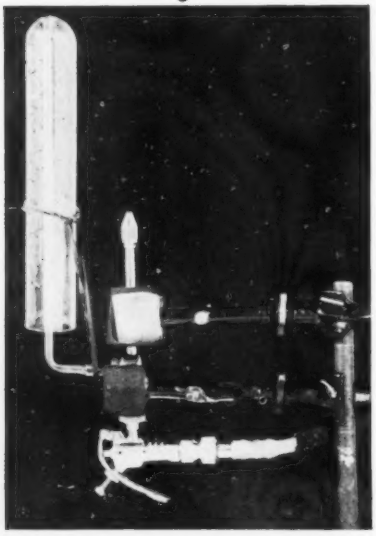

**Fig. 11—Atomizer set-up in Peet-Grady chamber for chamber method.**

*Arrangement in chamber.* The official Peet-Grady atomizer is mounted at the top center in a Peet-Grady chamber with the nozzle 57 inches above the floor and directed at the center of the floor. A long metal intake tube is bent to a right angle and attached to the atomizer so that the vertical portion can be placed in a mounted tube containing the insecticide to be sprayed. This arrangement is shown in Figure 11. The air hose leading to the atomizer passes through a hole in the wall of the chamber and is attached outside the chamber to a trigger valve or cutoff, so the operator can spray from outside the chamber.

Positions for five crystallizing dishes (3″ diam. x 2″ deep) are marked on the floor of the chamber. Instead of placing these dishes in line out from the center, they are located on different radii from the center so that the center of the first container is 7½″ from the center of the floor, the second 8¾″, the third 10½″, the fourth 13½″ and the fifth 16½″. The distance between centers of containers is 6″. Thus the containers appear to be arranged in spiral fashion as shown in Figure 12. The purpose of the spiral arrangement is to prevent the wall of one dish from interfering with the deposition of spray in the next dish. Figure 13 shows how rapidly deposit declines with distance from the center of the spray cone.

*Procedure.* Because most people thinking of roaches or bedbugs visualize the adult rather than the nymph, it was decided to use adult male German roaches or bedbugs in these tests.

For roaches, the crystallizing dishes are lined with a circle of filter paper with the position number written on it, and the walls are oiled to prevent their escape. Ten adult male roaches, taken from dated rearing jars as previously described, are placed in each dish. A newspaper is spread on the floor of the chamber (the usual gray bogus paper would be better) to absorb the insecticide. The paper is pierced by brads in the floor that mark the positions of the dishes, which are then placed on their appointed spots. The sample of insecticide to be sprayed (30 cc) is then placed in a test tube which is attached to the intake tube of the atomizer. The chamber is closed and the insecticide is sprayed upon the roaches in the dishes at a pressure of 12 pounds per square inch. Air is delivered until one second after all spray has been discharged. The dose gradient on the floor of the chamber can be seen during spraying in two ways: (1) If the spray is dyed red with Sudan III, the intensity of color of the sprayed area diminishes from the center outward. (2) When the O.T.I. or a pyrethrum spray is applied, the insects are first activated and first paralyzed in dishes nearest the center, the same effect coming later in the outer dishes.

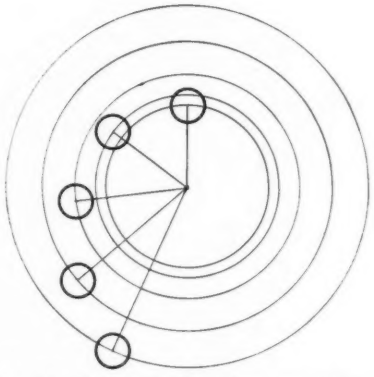

**Fig. 12—Position of dishes on floor of Peet-Grady chamber for chamber method.**

After spraying, the chamber is kept closed until six minutes have

*Before 27th mid-year meeting, National Association of Insecticide & Disinfectant Manufacturers, Chicago, June 9 and 10, 1941.

elapsed from the beginning of spraying. During this time mist is settling on the roaches. At the end of this period the chamber is opened, the ventilating fan is turned on, and the operator enters the chamber with five marked one-half gallon glass observation jars. The roaches are transferred to these jars with food and water. After five minutes more, knockdown counts are taken in the observation jars, which are put away in an incubator at 77° F. and 40 per cent R.H. until mortality counts are made the next day. Meanwhile the chamber is made ready for the next test.

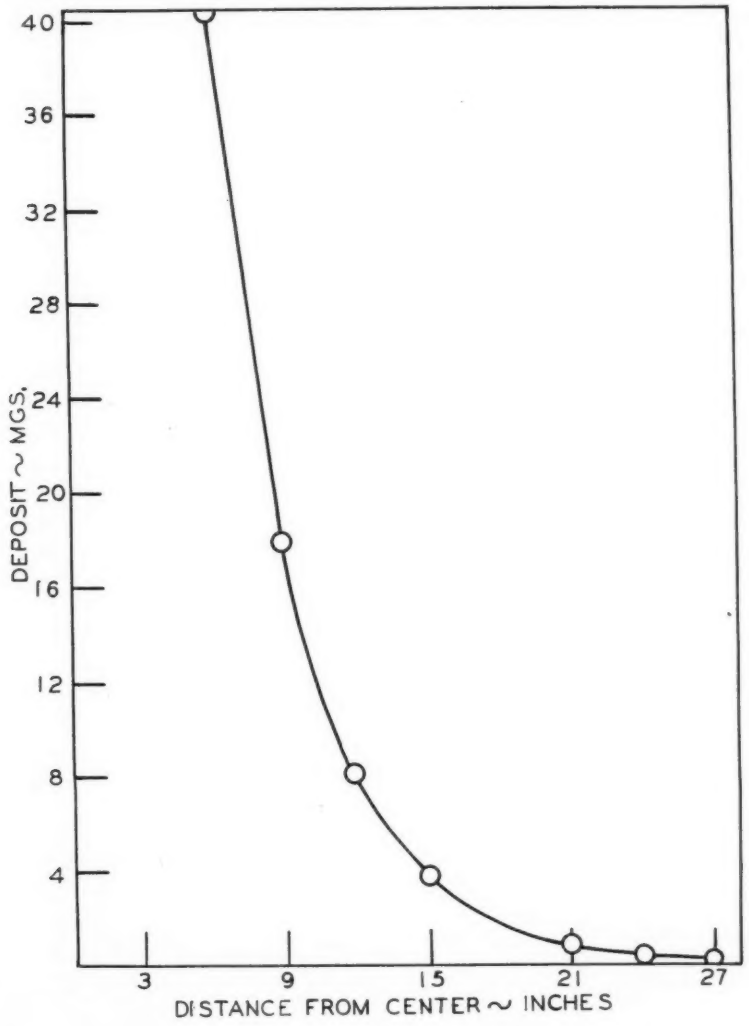


Fig. 13—Distribution of spray deposit on floor of Peet-Grady chamber in chamber method.

Bedbug tests are made in the same way in the same dishes with the following exceptions: The dishes need not be oiled. A circle of 1½" filter paper is placed on the larger filter paper in the crystallizing dish. After the spray application, the smaller filter paper is placed in the bottom of a 1½" Petri dish to which each group of bedbugs is transferred. These dishes are covered with cheesecloth. Thus the contact effect of the spray residue continues to operate during the observation period. The volume of spray applied to bedbugs is 30 cc and the time from beginning of spraying till opening of the chamber is 2½ minutes. Temperature control recommended for the Peet-Grady tests is satisfactory for chamber tests on roaches and bedbugs.

*Evaluation.* The numbers of tests so far made with this new method are sufficient to permit a definite recommendation on evaluation. The best that can be done is to present results of comparative tests of the O.T.I. and a pyrethrum-synthetic spray against roaches and results of tests of the O.T.I. vs. a synthetic spray against bedbugs.

Results on roaches in Table 2 show that in each of four comparative tests, both the O.T.I. and the unknown paralyzed all roaches in all dishes, that in each test the kill declined from 90 to 100 per cent in the dish nearest the center to 0 to 10 per cent in the dish furthest removed from the center, and that the total kill in each comparative test was greater for the O.T.I. than for the unknown. The 48 hour kill was the

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|---|---|
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Table 2. Results of a chamber test of an unknown insecticide vs. O.T.I. against adult male German cockroaches. Ten insects per dish.

| Position | O.T.I. Number paralyzed | O.T.I. Number dead, 24 hrs. | Unknown Number paralyzed | Unknown Number dead, 24 hrs. |
|---|---|---|---|---|
| **First comparison** | | | | |
| 1 | 10 | 10 | 10 | 10 |
| 2 | 10 | 10 | 10 | 9 |
| 3 | 10 | 10 | 10 | 8 |
| 4 | 10 | 4 | 10 | 0 |
| 5 | 10 | 0 | 10 | 0 |
| Total | 50 | 34 | 50 | 27 |
| **Second comparison** | | | | |
| 1 | 10 | 9 | 10 | 9 |
| 2 | 10 | 7 | 10 | 10 |
| 3 | 10 | 6 | 10 | 4 |
| 4 | 10 | 1 | 10 | 0 |
| 5 | 10 | 1 | 10 | 0 |
| Total | 50 | 24 | 50 | 23 |
| **Third comparison** | | | | |
| 1 | 10 | 10 | 10 | 10 |
| 2 | 10 | 10 | 10 | 5 |
| 3 | 10 | 2 | 10 | 2 |
| 4 | 10 | 0 | 10 | 0 |
| 5 | 10 | 0 | 10 | 0 |
| Total | 50 | 22 | 50 | 17 |
| **Fourth comparison** | | | | |
| 1 | 10 | 10 | 10 | 10 |
| 2 | 10 | 10 | 10 | 9 |
| 3 | 10 | 5 | 10 | 1 |
| 4 | 10 | 2 | 10 | 2 |
| 5 | 10 | 0 | 10 | 0 |
| Total | 50 | 27 | 50 | 22 |

**Totals**

| Position | O.T.I. Knockdown Per Cent | O.T.I. Kill (24 hrs.) Per Cent | Unknown Knockdown Per Cent | Unknown Kill (24 hrs.) Per Cent |
|---|---|---|---|---|
| 1 | 100 | 97.5 | 100 | 97.5 |
| 2 | 100 | 92.5 | 100 | 82.5 |
| 3 | 100 | 57.5 | 100 | 37.5 |
| 4 | 100 | 17.5 | 100 | 5.0 |
| 5 | 100 | 2.5 | 100 | 0.0 |
| Total | 100 | 53.5 | 100 | 44.5 |

same as the 24 hour kill in all cases. Adding up the results of the four tests, we find that the O.T.I. killed 53.5 per cent of 200 insects, while the unknown killed 44.5 per cent of the same number. Thus it is practically certain that the unknown was less effective than the O.T.I., but we are not prepared to say that 53.5-44.5 or —9 is a figure truly representing the relative effectiveness of the unknown. Theoretically it would be best to so locate the dishes that the average quantity of oil deposited in each would represent a known logarithmic series of doses. Then these doses would be plotted on logarithmic cross section paper against a probit scale of corresponding mortalities. The ratio of doses producing a 50 per cent kill as read from the graph would then represent the relative effectiveness of two insecticides, as explained under the lard can method.

Results on bedbugs in Table 3 show the same decline in effectiveness of the spray from the center outward. The unknown is obviously more effective than the O.T.I.

## Discussion

Let us assume that one of the three foregoing methods will be chosen by the N.A.I.D.M. as a tentative method for the evaluation of liquid insecticides against roaches and bedbugs and that it will be studied in cooperating laboratories of the association. Then we may ask on what basis the choice should be made.

The primary basis for choice is that the method selected should give relative results that represent relative effectiveness of insecticides as used in practice. It is not possible, however, directly to correlate laboratory results with practical results, because the latter depend not only on the inherent toxicity of the insecticide but on many varying and uncontrollable factors that are never twice alike, e. g., the quantity, rate, spray characteristics, and location of the application; the kind, intensity, and location of infestation, and the environmental conditions at the time of application. Since we cannot *know* which laboratory method best measures practical relative effectiveness, we must depend on general experience in and out of the laboratory to decide which method is *most likely* to give practical results and we must also take into consideration the initial cost of equipment and operating costs per test.

What is the relative importance of factors influencing roach control with liquid insecticides, aside from the composition of the insecticide? Our experience indicates that the most important factor is the quantity of insecticide placed upon the body of the roach and that it makes no difference in effect whether a given quantity is applied in the laboratory as a direct spray or as a settling mist.

Driveout of roaches may help or hinder control depending on the situation. If activated roaches run into the spray they will receive more insecticide and better control will result. If, however, they run away from the spray, as they may if there is a back exit from their hiding place, the driveout of roaches may reduce control. Therefore it does not seem essential to include a measure of driveout in a routine laboratory test.

The residual effect of a liquid insecticide is regarded as unimportant

Table 3. Reslts of a chamber test of an unknown insecticide vs. O.T.I. against adult male bedbugs.

| Position | O.T.I. No. of insects | O.T.I. No. dead 40 hrs. | O.T.I. % dead 40 hrs. | Unknown No. of insects | Unknown No. dead 40 hrs. | Unknown % dead 40 hrs. |
|---|---|---|---|---|---|---|
| 1 | 20 | 20 | 100 | 20 | 20 | 100 |
| 2 | 19 | 17 | 90 | 19 | 19 | 100 |
| 3 | 18 | 9 | 50 | 21 | 21 | 100 |
| 4 | 19 | 12 | 63 | 21 | 20 | 95 |
| 5 | 19 | 6 | 32 | 20 | 12 | 60 |
| Total | 95 | 64 | 67 | 101 | 92 | 91 |

in roach control because the behavior of roaches does not give spray residue much chance to operate. If a sprayed roach is able to run, it will not remain on a treated surface. On the other hand an unsprayed roach is not likely to enter a treated area so long as residue remains that would affect it. In other words, the mobility of roaches tends to minimize the effect of spray residues of prevalent liquid household insecticides. We therefore favor the transfer of roaches to unsprayed containers after application of insecticides in laboratory tests.

The effect of vapor from prevalent liquid household insecticides is negligible against roaches; partly because of their mobility, but chiefly because lethal concentrations are not reached in sprayed rooms. There is no justification at present for inclusion of the effect of vapor in a routine laboratory testing method.

As the behavior of bedbugs is not the same as that of roaches, the factors influencing control are somewhat different. When bedbugs are sprayed in their hiding places, they do not scurry away as roaches do. Even pyrethrum sprays do not greatly activate bedbugs, which tend to remain in the sprayed area. This behavior has a bearing on the design of a laboratory testing method.

As in the case of roaches, the quantity of insecticide that is applied to the bodies of the bugs is the primary factor in control. Our tests show that it makes no difference whether a given quantity is applied as a direct spray or as a settling mist. Because bedbugs are slow to leave a sprayed area, the effect of spray residue is of real importance and should be included in a laboratory test by keeping the bugs during the observation period on the sprayed surface. Our tests have not so far enabled us to decide whether the effect of spray residue is due to liquid or vapor, but we know that the relative effectiveness of different insecticides depends on whether or not bugs are exposed to spray residue and we believe that it is desirable from the practical point of view to include the effect of spray residue in a laboratory test.

In view of the foregoing discussion we recommend that the N.A.I.D.M. try either the settling mist method or the chamber method. We do not recommend the lard can method for roaches because we believe that its principal feature, measurement of driveout, is unnecessary for a routine test, that it requires too much time and space for economical operation, and that it is not suitable for tests against bedbugs.

Of the two methods recommended for trial, we prefer the settling mist method for the following reasons: (1) It is the most rapid and precise of the three methods, (2) it requires the least space of the three methods, (3) it gives results that are in line with practical expectations. Lest doubt still be expressed about the validity of the last statement, it may be said that insecticides in question have given practically the same results relative to the O.T.I. by all three methods.

For those who do not have the Barnhart settling mist tower, the chamber method may have a special appeal, because so little new equipment is needed to operate it. However, it must be pointed out that the chamber method is slower than the settling mist method and is mechanically less precise.

It is not necessary that newly hatched insects be used in the set-

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tling mist method, nor that adult insects be used in the chamber method. However, the number and uniformity of insects available for test purposes (the limiting factor in output of roach and bedbug tests) will be greatest when newly hatched insects are used.

In all our work with roaches and bedbugs the O.T.I. has been used as the standard of comparison. We do not know and are not able to find out whether the O.T.I. is a reasonable standard for tests against roaches and bedbugs. Because of its use in the official Peet-Grady method, the industry has come to believe that an insecticide that is less effective than the O.T.I. against houseflies is practically worthless. This interpretation has been carried over by certain members of the N.A.I.D.M. to the results of our tests against roaches and bedbugs. If we find that A's insecticide is less effective than the O.T.I. against roaches, he assumes that we regard it worthless and is insulted because he knows that it has controlled these insects in practice. He does not believe that there is anything wrong with his insecticide but he does believe fervently that our method of testing is a travesty of justice. His conclusion is natural, but is based on the false premise that an insecticide less effective than the O.T.I. is worthless. Suppose, as may well be possible, that the O.T.I. is an excellent insecticide for roach control and that A's insecticide, though less effective, is still sufficiently potent to give good control when properly applied in practice. If that is true, then a different and less potent O.T.I. is needed for roach tests so that A's insecticide will be superior to it rather than inferior.

In the case of bedbugs, let us assume that the O.T.I. is less potent than it should be to represent an insecticide that gives fair results in practice. Then a more potent O.T.I. is needed for bedbugs.

It is very difficult to determine by practical tests the strength of a pyrethrum spray or the composition of any other spray that would best represent a fair insecticide for roach or bedbug control. For example, we attempted to throw some light on the question by observing the results of applications of the O.T.I. and other insecticides against bedbugs in a local institution. The applications were made by an experienced pest control operator who did such a thorough job that all insecticides gave a complete kill, leaving us still in the dark.

Until the association is ready to accept the present O.T.I. as a standard for tests against crawling insects or is prepared to propose other standards, we feel that there is no serious objection to continued tentative use of the present O.T.I. for crawling insects, provided it is understood that the practical effectiveness of the O.T.I. is unknown and that insecticides that are less effective than the O.T.I. are not necessarily worthless.

What conclusions can be drawn from results of laboratory tests of an unknown vs. the O.T.I. against crawling insects? If in comparative tests A is less effective and B more effective than the O.T.I., the buyer may confidently believe that in the long run B will give better results in practice than A. He should not conclude that A will not control crawling insects when properly applied nor should he exclude A from consideration of purchase, unless his arbitrary specifications call for an insecticide more potent than the O.T.I.

The tendency, of course, will be to call for an insecticide more potent than the O.T.I. against roaches and bedbugs. This may or may not be necessary, but from the point of view of the buyer it can do no harm so long as he can buy such an insecticide for a reasonable price.

The adoption of a precise official method for crawling insects, no matter what it may be or what standards are used, will result in a general improvement of these insecticides, as was the case with fly sprays. Manufacturers who accept the results of these tests and are guided accordingly will be the first to profit and everyone concerned will ultimately be benefited.

EDITOR'S NOTE: *Reprinted from Soap and Sanitary Chemicals.*

## Nervous Rats

It seems that the celebrated Pied Piper was right in using a shrill musical instrument to lure the rats out of Hamelin. A research report just published in Science by Clifford Morgan and James Gould of the Biological Laboratories of Harvard University reveals that while rats are practically deaf to low notes they are highly receptive to shrill ones. Not only that, but they can distinctly hear notes which are too high in pitch for any human ear.

The experiments which brought this finding were not designed to corroborate or discredit the Pied Piper legend, nor were they performed merely out of curiosity about the rodent's musical appreciation. They bear significantly on psychological research for, in their efforts to unscramble the elemental motives of human conduct, psychologists have turned increasingly to the rat as the subject for experiments which cannot be done with people. —*N. Y. Times.*

## Flies Are Linked to Poliomyelitis

**Evidence Indicates They Are Carriers of the Malady, Health Group Hears**

A study in the spread of infantile paralysis in which considerable circumstantial evidence was amassed against flies, especially the green bottle fly, was presented by two Yale University medical scientists, Dr. John R. Paul and Dr. James D. Trask, before the American Public Health Association at Atlantic City on October 16, 1941.

The clue that led to this suspicion, they explained, was the frequent recovery of poliomyelitis virus from sewage and polluted streams out of which flies were observed to obtain nourishment. On two separate occasions on which flies hovering in such a vicinity were caught, they were found to be harboring the paralyzing virus.

"The possible carriage of the virus by these insects would explain much about the baffling nature of this disease," the investigators reported. "It is a problem which deserves grave consideration by the sanitary engineer."

## Airplanes and Mosquitoes

Two millions in money and ten years in time have been spent in virtually wiping out the African strain of malarial mosquito in Natal, on the Brazilian coast. The mosquito in question belongs to the anopheles species. Feeble fliers, they are easily stopped by a few miles of water and die after a few days in dry air. Fast ocean liners, airplanes and automobiles have enabled them to invade South America. Dr. Clay G. Hubb, (University of Chicago) thinks that if the future small "flivver" planes are widely used the threat will be increased tremendously. The mosquito was first found in 1930 near a ship and plane anchorage at Natal. In two months it had spread and infected 100 per cent of the inhabitants of near-by districts.

—*N. Y. Times.*

## Keep On Fretting, Cussing Too, Some Day Order Will Come Through

Washington. — "What is delaying our order?" wrote a local photo shop to a supply firm in Newark, N. J.

Came this poetic reply:

"Dear sirs, we regret
We can't fill your order yet.
We know your shipment's overdue,
At least a month—or is it two?—
But bakelite's scarce and rubber's rare,
(We're hardly sure of even air!)
Priorities and OPM
And troubles even worse than them
Make us rant and rave and fuss,
And stew and sweat, and even cuss,
St'll, we'll ship you—don't get sore!
'Twill take a month or maybe more.
So keep on hoping; don't say die;
We'll fill your order bye and bye."

It is a surprising fact that there are few seasoned advertisers who have ever allowed themselves to become back-sliders. —*Printers' Ink.*

## Pest Control in the News

### ANIMAL ODORS

QUESTION—Our house was formerly occupied by a tenant who kept a variety of animals: cats, dogs, white rats, etc. The house has been done over, with walls and woodwork papered and painted. Floors were scraped and refinished. When windows are shut and on humid days there is a decided animal odor. We are dreading the winter, when everything has to be shut. Have you any suggestions?—M. C., Packanack Lake, N. J.

ANSWER—Animal odors are difficult to eliminate. Perhaps some emanate from the basement. Scrubbing the floor and walls with hot water and ammonia may help, followed by rinsing with clear water. Chloride of lime generously sprinkled over the cellar floor might also be tried. Continue airing the house on clear, dry days.

---

QUESTION—When I close my two-story house for the winter, would it be practical to put small quantities of liquid formaldehyde in containers in different parts of the house for general fumigating purposes? Would this get rid of silverfish?—E. A. B., Bellaire.

ANSWER—Instead of taking chances with formaldehyde you can get excellent results by scattering a pound or two of moth balls in each room. The heavy fumes that will form will keep the house free from insects, field mice, chipmunks, etc. Low temperatures through the winter will be killing to silverfish and to many other insects. If you have not already arranged to do so, you can get further protection by putting a tight box over the top of the chimney.

—*N. Y. Sun.*

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### ROUTING THE MOLES

No lawn ever suffered more from the tunnelings of ground moles than mine did last summer. Subsurface, it was like the Grand Central area in miniature. Being unschooled in such matters, I applied to Mr. Connery at the general store in Georgetown, and he told me of an ancient German gardener who, years ago, had solved a similar problem for him. The gardener told him to put one-half teaspoonful of potash (lye) in each runway, near each junction point where the runs come together. The theory was that the mole, moist of nose, encountered the potash, burned his snout, turned about and dashed in the direction from which he had come, burned his snout again, and after a few minutes of such frustration emerged above ground and departed.

I cannot vouch for this nature note on what a mole does and feels when his avenues have been potashed, but I can report that the method works. Within a week from the first application my lawn was moleless. Later on in the season an occasional uneducated mole ventured back into the forbidden area, but each time a few more applications routed him. B. Darnton, Conn.

—*New York Times.*

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I congratulate poor young men being born to that ancient and honorable degree which renders it necessary that they should devote themselves to hard work.

—*Andrew Carnegie.*

## Insect!

Recently a lady living on Ponce de Leon Avenue found that her kitchen was infested with ants. So she telephoned an insect exterminating company whose representative hastened to the scene. The lady's aged butler, William, answered the ring at the front door.

There was a neat, pleasant-looking stranger standing just outside, who remarked, "I'm the bug man!"

Uncle William, with all the freezing dignity of the ante-bellum darky, gave the man a withering look and said:

"Ain't nobody in this house plays the bug!"

With that he closed the door in the caller's face and reported indignantly to his mistress. It took another energetic ring at the door bell and much explanation from the representative of the exterminating company before he was finally admitted.

C. P. BOSTWICK, Atlanta.

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## Find Red, White, Blue Termites

Baton Rouge—Patriotism has gone a long way, a pest exterminating firm concluded after finding some termites under a house colored red, white and blue.

There was a logical explanation. They had fed on red, white and blue yarn inside a toy baseball and—since they have transparent outer skins from which lately-eaten food shows through—the termites appeared all dressed up for the Fourth of July.

—*New Orleans Item.*


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2. Largest opening for easy filling.
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BBK Bedbug Killer BBK

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DERRIS EXTRACT — DERRIS POWDER — ROTENONE

FLUOREX R — FLUOREX T — FLUOEX V

FLUO-PYRE — INSECT SPRAY — CATTLE SPRAY

PHOSPHORUS PASTE — PHOSPHIDE OF ZINC

POISON SEED FOR MICE — POISON SEED FOR RATS

PYRETHRUM TESTED POWDER

PYRETHRUM DALMATIAN

PYRETHRUM EXTRACT NO. 5

PYRETHRUM CONCENTRATE NO. 20

GENUINE RED SQUILL — RED SQUILL FLUID EXTRACT

STERILAN For Moths

THALLIUM SULPHATE — THALLIUM PASTE FOR ANTS

POWDER BLOWERS — SPRAYERS — DUSTERS

RESPIRATORS — SEALING TAPE

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*Prompt Deliveries*

# Dr. R. C. Roark Demonstrates New Insecticide Spray Principle

## *N.A.I.D.M. Elects John N. Curlett as President at Annual Meeting, December 1, and 2, 1941.*

*Proximity of December-Pests' closing date, and opening date of N.A.I.D.M. Convention made it impracticable to present as complete a story of the event as we should have liked. The notes which follow fill in the gaps in the December report.*—EDITOR.

BEFORE a capacity audience at the Tuesday morning session, Dr. R. C. Roark, Principal Chemist, Division of Insecticide Investigations, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington, D. C., introduced and explained the working principle of a new insecticide spray principle developed by Lyle D. Goodhue and W. N. Sullivan, Bureau of Entomology and Plant Quarantine, Washington, D. C. He pointed out that because the insecticide was in colloidal form due to its refrigerant base, it retained its potency for a much longer period when used than if the insecticide had an oil base. Actually demonstrating the spray with a new type of hand pressure sprayer, Dr. Roark stated that the insecticide was non-inflammable. More complete details will be reprinted in a later edition of PESTS.

**Priorities as They Relate to Chemicals and Allied Products**—Dr. D. P. Morgan, Assistant Supervisor, Chemicals Section, Office of Production Management, Washington, D. C.

Dr. Morgan indicated importance of industry realized, and that a special order giving it a defense priority rating under consideration on disinfectants. He said the type of order under consideration would not be of the over-all variety, but would require specific applications for the material used in each separate product. The priority granted under the application, he declared, would likely be limited to a specific period, "probably monthly." He also pointed out advantages of preference rating system over allocation system and urged the industry not to press for the latter since it would not be to its advantage to do so.

**The New Regulations for Enforcement of the Insecticide Act of 1910**—Dr. C. C. McDonnell, Chief, Insecticide Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C.

Mr. McDonnell explained in detail new ramifications of the Insecticide Act, and answered many questions which had been submitted in writing.

### New Officers and Board Members Elected

President, John N. Curlett, McCormick & Co., Baltimore, Md.; 1st Vice President, Henry A. Nelson, Chemical Supply Co., Cleveland, Ohio; 2nd Vice President, Gordon M. Baird, Baird & McGuire, Inc., Holbrook, Mass.; Treasurer, John Powell, John Powell & Co., New York; Secretary, H. W. Hamilton, White Tar Co. of N. J., Kearney, N. J.

The three members elected to the Board of Governors for three years are:

C. L. Weirich, The C. B. Dolge Co., Westport, Conn.; Robert C. White, Jr., Robert C. White Co., Philadelphia, Pa.; W. L. Zick, Stanco, Inc., New York.

The Board of Governors for 1942 is as follows: J. L. Brenn, Huntington Laboratories, Inc., Huntington, Ind.; R. O. Cowin, Standard Oil Co. (Ohio), Cleveland, Ohio; W. B. Eddy, Rochester Germicide Co., Rochester, N. Y.; Preston B. Heller, B. Heller & Co., Chicago, Ill.; E. G. Klarmann, Lehn & Fink Products Corp., Bloomfield, N. J.; C. L. Weirich, The C. B. Dolge Co., Westport, Conn.; Robert C. White, Jr., Robert C. White Co., Philadelphia, Pa.; Russell H. Young, Davies-Young Soap Co., Dayton, Ohio; W. J. Zick, Stanco, Inc., New York.

Due to unavoidable absence of Dr. E. A. Back, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington, D. C., his scheduled talk, "The Control of Clothes Moths and Carpet Beetles," was not given.

Motion to take mail vote of membership to determine whether mid-year June meeting of the N.A.I.D.M. would be held at Cleveland, Ohio, or Hershey, Pa., was passed.

In attendance, was N.P.C.A.'s President, P. Calvert Cissel, whose presence as an honored guest of the N.A.I.D.M. was noted by the chair, as was that of Secretary W. O. Buettner.

# Entomological Literature

### DEVICES FOR INSECT CONTROL—INSECTS IN RELATION TO NATIONAL DEFENSE

Circular 20 — August, 1941 — Issued by U. S. Department of Agriculture, Bureau of Entomology and Plant Quarantine, Washington, D. C.

Table of contents includes in part: Care of Insect Control Devices; Power Sprayers; Spraying Accessories; Dusting Equipment; Fumigation Equipment; Fly Traps; Insect Electrocutors; Respirators; Tarpaulins Rubberized; Gloves and Aprons, etc.

### New Book

Frank E. Lutz, Curator of Insects at The American Museum of Natural History, New York, for twenty years, has written a book called "A Lot of Insects: Entomology in a Suburban Garden," 340 pages, Putnam, $3. Dr. Lutz makes his home in a Northern New Jersey town. His house, he notes in his book, stands in the center of the town, one block from Main Street and two or three blocks from the railroad station. The yard is small, measuring 75 by 200 feet, and ornamented with the usual trees, flowers and shrubs. Some years ago Dr. Lutz started keeping a record of the various insects that came crawling or flying around. He found that he had almost 500 different species of moths and butterflies alone. He had more than 250 different flies, gnats and midges. He had more than 250 different beetles. He had 167 different ants, bees and wasps. He had seventy-five different aphids, cicadas, scale insects and treehoppers. He had grasshoppers, crickets, walking-sticks and mantids. He had damsel flies, dragon flies, caddis flies, May flies, ant lions, aphis lions, stink bugs, kissing bugs and a couple of hundred others more. The grand total, as he added it up, was 1402 different species, representing twenty-six different orders, from Anoplura and Collembola down to Trichoptera.

It is not enough to be busy; so are the ants. The question is: What are we busy about?—*Thoreau.*

# Specimens Arrive for Research

SPECIMENS and samples of damaged materials as well as letters have been forwarded to the University of California in response to the recent announcement of the research program and request for materials. A keen interest on the part of operators has been demonstrated.

*See article, "Conference Research Started," December, 1941, PESTS for further particulars.*—EDITOR.

But more specimens from wider areas are necessary if a real analysis of the type and distribution of Carpet Beetles and Wood Boring Beetles is to be made. More reports on successful methods of capturing and rearing subterranean termites are needed. Information on special research projects which have been carried on by operators, or which operators would like to carry on in cooperation with the University faculty are desired.

Quantities of carpet beetles and colonies of subterranean termites are also needed for setting up tests and exhibits.

### Ability of Operators Doubted

Can the average operator carry on experiments and make accurate observations? This is a question which has been asked by some operators and which has also been brought up by trained research men. Cases where an operator reports unusual conditions without specimens or in which pests prove to be improperly identified show operators up in a bad light. The way to be sure of identifications is to send the specimens to University of California and have accurate identifications made. Misinformation is worse than no information.

The question has also been asked, "If an operator in the course of the research program learns something which appears to have value, will he turn in the information?"

The answer is that the work which must be done first is to obtain the basic facts regarding types of pests, life habits and possible methods of control, and no single bit of information will have great value. When the whole information is assembled it will be made available to those who have participated actively. All information will be sent direct to faculty members at the University and be available to others at their discretion.

The main idea is to enable the industry to learn basic facts which point the way to better pest control, and let each operator work out the details from there.

### Now It Is Up to Us Operators

We cannot afford to let this challenge go unanswered. We contend that most of the worthwhile advance made so far has been through the efforts of practical pest control men.

We heard at the recent convention of the National Pest Control Association in San Francisco of the pitifully inadequate funds being supplied

GREATER *Kills* with CERTOX
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POISON SEEDS

Made of U. S. P. Strychnine. Contains no Brucine or adulterants. Sweetened with U.S.P. Saccharin and scented with U. S. P. Anise. Slow baking makes the poison potent and attractive to rodents. Seeds retain their potency indefinitely.

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Greater quantities of ACTIVO, a pure Powdered Pyrethrum product containing .5% Pyrethrins, are being used by the pest control industry during the present scarcity of SODIUM FLUORIDE.

ACTIVO PRICES LOWER

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THE WORLD'S LARGEST BOTANICAL DRUG HOUSE

by the federal government for research on household pests, some $14,000 for the whole United States. It is evident that operators must help themselves.

The way to help ourselves is to deluge the Conference Faculty with specimens and suggestions until we meet with them next February, at which time they will have a sufficient fund of information available to launch the tests so badly needed.

### This Is What You Can Do

Send in samples of carpet beetles wherever found, giving information about the infestation, addressed to the University of California, attention Dr. A. E. Michelbacher.

Send in large quantities of carpet beetles for rearing purposes with material on which they are feeding if possible.

Send good colonies of subterranean termites.

Send small samples (two or three inches long) of work of powder post or other wood boring beetles with data.

Write your suggestions for rearing subterranean or dry wood termites in captivity.

Write suggestions for capturing large colonies of subterranean termites.

Report briefly specific research work which you have done on any structural or household pests which you think may be of value. More details may be asked for by the faculty if the work appears promising or in line with the program.

Suggest specific problems which you think need research, whether it be rats, ants, roaches, other pests.

*Write or send samples other than carpet beetles to the Entomology Dept., University of California, Berkeley, Calif., attention Dr. E. G. Lindsley.*

**Remember: The faculty will identify infestations and supervise the program, but the motive power must be supplied by the operators. Those who cooperate by sending specimens or information will be invited to the round table discussions at the Conference.**

*—C. P. C. M., December, 1941.*

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Who ran for President against Teddy Roosevelt? Have you forgotten that name? Then perhaps you remember who was Wilson's opponent in 1912? Ah! The public forgets trade names even more easily.—*Printers' Ink.*

# BUGS IS BUGS

*By* HAZEL WATKINS LAIRD

EDITOR'S NOTE: *This is the third of a series of five articles prepared by Mrs. Laird, A. & M. Termite Co., Stillwater, Okla., for PESTS, the first two having appeared in the November and December issues. She designed the articles to make the public chuckle, to educate it through the conversations of insects, thereby, creating good will and enlarged opportunities for pest control sales. PCOs may, if they wish, reprint any or all of the articles for use in their own promotional effort, or submit them for reprint to their local newspaper, provided credit line is given Hazel Watkins Laird, as author, and PESTS, as publication source.*

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"Bugs is bugs," I say, "Little bugs make big bugs, and vice versa, unless something is done about it: and until the whole slough of scientists, entomologists and exterminators get together and work out something to eradicate some of the itchiest bugs, innocent members of society will just simply have to keep on scratching! Until that happy day arrives may I give a bit of advice and offer a few suggestions on this very important subject?

The bug which most gets under my skin is the mosquito and as in the case in many forms of life, it is the female of the species that does the work. Mrs. Amos Ketto's anatomy consists of a drilling tool, a piercing suction pump and a reservoir attached to a small flying motor with a loud exhaust. The best way to distract her from her prey is to place fine wire mesh screens over the doors and windows of the home. However, if one must sleep in the open, other means of prevention are available which are at least partially effective.

For instance, the breeding place of the mosquito family must be located, and in case this proves to be a puddle of stagnant water, kerosene may be poured over it. Then the few nighthawks that did not go home to roost can be warded off otherwise.

Personally, I take a fly sprayer, a good swatter, and a can of oil of citronella to bed with me, then if the "mosquitoes don't get me the citronella must." The fly swatter will help in repulsing the most persistent. Here's a little verse I picked up which shows a bit of sympathy:

Mosquitoes drive you almost mad,
They come around at night
And when you're not asleep they buzz
And when you are—they bite.

There is another little insect that causes no end of scratching at this time of the year, generally for dogs, but when civilized people give lawn parties at their homes, this insect often embarrasses them also. I speak of the defenseless little flea, defenseless because he is so easily chased away. Just sprinkle naphthelene flakes on the grass. That will do the job! Really I have always felt rather sorry for the flea; human beings are much better off than they. An old mother flea was once asked why she was so sad. "Oh," she said, "I am so unhappy. You see all my little fleas go to the dogs."

Then there is the chigger, and the very mention of that name always has a tendency to make me wish I were less refined. The chigger can be found at this season of the year in the nicely clipped lawns of the city, or rather that is where the trouble lies, for he cannot be found, even after he has jumped from his little nook underneath a blade of grass onto your sheer stocking where he begins operations. The thing to do of course is to get the chigger before the chigger gets you, and this can be accomplished by dusting plain old sulphur in the grass.

Also when you are contemplating a picnic, a fishing trip or a hike, the sprinkling of sulphur in the cuff of your trousers or slacks is very effective in discouraging this pest. It would not even offend to rub a little sulphur on the lower limbs just above the shoes or boots.

The poet toasts the chigger thus:

Here's to the chigger who grows no bigger
Than the point of a pin.
The lump that he raises itches like blazes,
And there's where the rub comes in!

By far the worst pest that has ever pestered mankind or womankind, as the case may be, in my opinion is the bed bug and I do not really think Mr. Bedbug intends to be a pest at all. It is only that he must have a means of livelihood for his large family, and he has to get out there and dig, preferably in the night time; as he is sure to be looked for in the daylight.

Bedbugs are carried from hotels and tourist camps; they are seldom

found in civilized homes. But as my practical neighbor says: "It is no disgrace to get bedbugs, the disgrace is to keep them." And in case you do know of someone who is thus troubled, you might tell them that to fumigate with poisoned gas is the best and most complete remedy. This, however, should only be put out by authorized workers.

Now, alas, the following verse on the begbug is my own:

The bedbug is a wily cuss
Cautious and persistent;
He crawls upon you in the night
Where you are least resistant.

But enough of this uncouth subject.

"Myrtle, dear, would you please hand me the ivory handled backscratcher? I believe I have a bite."

### Colok

U. S. Rubber has brought out a new rubber chemical compound known as Colok, to be used for applying chemical treatments to clothes, to make them last longer. It can be used on silk and wool hosiery, wool blankets and sweaters, gloves and heavy wool underwear. Garments or fabrics thus treated become shrinkproof. Moreover, moths avoid them. —*Printer's Ink.*

# LOCAL ORGANIZATION NEWS

### Connecticut Pest Control Association

At the annual dinner meeting of the Connecticut Pest Control Association held at Bence's Hotel, New Haven, Conn., November 18th, there took place the election of officers. Fred Haas of the Aetna Exterminating Company of Hartford was elected president; Walker Heap of Abbot Pest Control, New Haven, vice-president; O. N. Anderson of Berg Exterminating Company, Hartford, secretary-treasurer.

Plans for 1942 were discussed with decision to hold meetings in several cities next year, the first of which is to be held at Hotel Burritt in New Britain. Practically the entire membership will enroll at the Second Eastern PCO Conference to be held at Massachusetts State College, January 12-13-14.

Among those present at the dinner meeting were:

Fred Haas, Aetna Exterminating Co., Hartford; Thomas Ledwith and O. N. Anderson, Berg Exterminating Co., Hartford; Walker R. Heap, Abbot Exterminating Co., New Haven; Joseph A. Putinski, City Storage Co., New Britain; Neely Turner, Connecticut Agricultural Experiment Station, New Haven; A. Mason, Mason Exterminating Co., West Haven; William Duncan, Birchard System, Inc., New Haven; L. Bernstein, U. S. Exterminating Co., New Haven; F. Bureau, A.B.C. Exterminating Co., New Haven.

### New York City

A joint meeting of the New York Pest Control Association and Professional Exterminators Association was held at Hotel Commodore, New York City, on December 22nd. This is the second meeting in which the two local associations of New York City have met together in the last month. The cordial relations that have prevailed between these two associations, most of whose members are also members of the National Pest Control Association, recognized the larger field of common interests which called for unanimity of consideration and action on industry matters of local importance.

The presidents of both associations, Bill Buettner and Joseph Finneman, discussed mutual matters of importance such as shortages, especially that of sodium fluoride which in New York City must be colored nile blue; Section No. 104 of the Sanitary Code, and Labor Relations program. Over eighty firms attended the meeting.

A committee composed of E. J. Jennings, Milford Oachs, Arthur W. O'Connor, Joseph Finneman and William O. Buettner submitted the Labor Relations report which received favorable action.

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WE MANUFACTURE FOR THE JOBBER EXCLUSIVELY

WE SPECIALIZE IN PRIVATE BRAND PACKING FOR THE JOBBER
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***Prepared to Kill?***

**Prentiss Pyrethrum Products** with high **Pyrethrins** content are your best guarantee of dependable **Killing Power.**

Prove to yourselves that **Prentiss Pyrethrum Products** can be relied upon for **High Killing Power at a Minimum Cost.** Write for samples and prices on—

- **CLARIFIED PYRETHRUM No. 20**
- **HIGH TEST PYRETHRUM POWDERS**
- **ACTIVATED DUST**
- **POWDERED RED SQUILL**
- **POWDERED DERRIS ROOT**

Wise PEST CONTROL OPERATORS are substituting PYRETHRUM POWDER for SODIUM FLUORIDE which is almost UNOBTAINABLE. For this SUBSTITUTION PYRETHRUM POWDER of lower PYRETHRIN CONTENT may be used. Write us for special prices.

**R. J. PRENTISS & CO., INC.**
80 JOHN STREET NEW YORK

# WHAT'S NEW IN PEST CONTROL-PERSONALS

**Name Cushing Head of E. & P. Q. Division:** Dr. P. N. Annand, chief of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, recently announced appointment of Emory C. Cushing to succeed Dr. F. C. Bishopp as chief of the division of insects affecting man and animals.

Mr. Cushing was on the staff of the Texas Agricultural Experiment Station before joining the Bureau of Entomology and Plant Quarantine in 1928. His work with the Bureau has been largely devoted to investigations of insects affecting man and animals and for several years was assistant Division Leader. It was due to his efforts that the true screwworm was identified, revolutionizing control of this very important pest.

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**Biometrics Section of American Statistical Association Meets:** Sessions on Statistical Problems in Entomology were held at the Biltmore Hotel, New York City, December 27, 28, 29, 30, 1941, with a closing session and demonstration at the Boyce Thompson Institute for Plant Research in Yonkers on the afternoon of December 30. The Eastern Branch of the American Association of Economic Entomologists cooperated in formulating program for sessions on Monday, December 29. The Western Meeting of the Biometrics Section was held in Berkeley, Calif., on the Campus of the University in Hilgard Hall, December 29, 30, 31, 1941.

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The Orkin Exterminating Co. of Birmingham, Ala., with December 15th has moved to larger and more convenient headquarters with new address being 101 South 20th St. Congratulations to Abe Krawcheck who manages the Birmingham, Ala., office.

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Recent visitors to New York were Charles W. Houghton, Boston, Mass.; Harry Studier of Cleveland, Ohio; Martin Meyer, Philadelphia, Pa.; Matthew Russel, Springfield, Mass.; Prof. J. J. Davis, Lafayette, Ind.; P. Calvert Cissel, Washington, D. C.; Leonard Goldman, Providence, R. I.

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From Miami Beach, Fla., comes word from Mr. and Mrs. Sidney Wimmer that both are enjoying a "much needed rest and a swell vacation." Mr. Wimmer operates the Majestic Exterminating Company in New York City.

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"The War on Brother Rat," by James Nevin Miller, is an interesting article published in the September, 1941, issue of Hygeia, the official magazine of the American Medical Association. This article is worth reading and might well be in the files of every PCO.

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**California State Convention Date Set:** The Board of Directors of the California Pest Control Association has set the dates of May 29 and 30, 1942, for their next State Convention. The place will be Long Beach, Calif.

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**Insect Statistics:** According to Dr. Ditmars' article "Good and Bad Insects," in October 26, 1941, issue, The New York Times Magazine section, insects outnumber in species all the rest of the animal kingdom put together. More than 600,000 species have already been named—insects alone—and many thousands more are waiting to be identified. There are 180,000 known species of beetles, the largest single group in the whole of the animal kingdom, with 20,000 species right here on our own continent. There are 80,000 species of moths and butterflies, 60,000 species of ants, bees, wasps, and 50,000 species of flies, mosquitoes, gnats.

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**Advertising:** Seven basic principles on which successful, result-getting advertising is founded were outlined recently by Richard Manville of Newell-Emmett Company, Inc., in an address before the Association of Advertising Men at the Phi Gamma Delta Club. The principles are based on a six-year study of millions of dollars worth of keyed advertisements and are applicable to all types of ads in all media.

According to Mr. Manville successful advertisements offer to the specific customer market satisfaction of wants, quickly and unmistakably, in the most specific terms, with the least possible distractions, in the most believable manner, and at the least expenditure of effort or money. To illustrate his point Mr. Manville then displayed sets of similar ads which differed widely in response. One ad, for instance, for the same product running under similar circumstances pulled ninety-nine times more than the other. In another case a simple switch in headlines made a difference of 4,500 per cent.

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Wood kept dry, says government scientists, is a permanent building material. There is no true "dry rot" and fungi cannot grow in wood containing less than 20 per cent moisture—Science News Letter.

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According to Tide, within a few months Zonite will begin to market a permanent moth repellent tentatively called Washfast, to processors of woolens.

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**Rattle-Bush Beans Rodent Repellent.**—Rattle-bush beans, so named for the noise their dry pods make when shaken, have hitherto had no economic value. They have, however, been prized as a decorative plant. Now it has been found that a meal made of the ground beans is so abhorrent to rats and other rodents that the addition of as little as ½ of 1 per cent of it to a mixture of planting seed will repel all rodents. What the bean contains that is offensive to rats has not been established as yet.

—*N. Y. Times.*

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**Poison for Silverfish:** Silverfish, the long grayish insects that scamper through stored books, papers and linens, have had their private lives examined and their death warrant written. The likes and dislikes of these elusive pests that destroy valuable papers. books and heirlooms have been discovered by Arnold Mallis, entomologist of the University of California at Los Angeles.

The species used by Mr. Mallis in his studies, called Ctenolepisma urbani by entomologists, is unable to survive a spray of pyrethrum. When the silverfish is confined in a pyrethrum dust it shows great signs of irritation, often within thirty seconds. The pyrethrum dust adheres to the hairs on the body and around the mouth parts as well as upon all appendages. The insect becomes paralyzed within from three to ten minutes.

Sodium fluoride and sodium fluosilicate have been used in the past to control silverfish but were only partially effective. If these poisons are combined with pyrethrum, the lethal result to the pests is greatly enhanced. Treated "cards" sold commercially for silverfish control have little effect on the pests.

The diet preference of silverfish was also studied, and it was found that animal fibers such as silk and wool are not as popular with the pests as vegetable fibers, linen, rayon, cotton and lisle. As all paper and fine old linens are made from vegetable fiber sources, this explains their choice of libraries and linen closets for habitation. The insects are very fond of Cellophane, Kleenex and onion-skin paper, preferring these materials to newsprint and cardboard.

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Joe joined the Army.

All of which reminds me that some thirsty folks pray for rain—and others dig a well.

Which leads into the old story of the traveler in Western Kansas who met the chap with a lot of barrels on a sled:

"What ye doin'?"

"Hauling water."

"How far?"

"Four miles."

"Heavens, man! Why don't ye dig a well?"

"What's the use? It's the same distance.

—*Purdue Extension News.*

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## Ladies, Wear This, and Don't Fear Mice

Los Angeles—Ladies willing to wear girdles, copper stockings and batteries need have no fear of mice.

A contraption exhibited at the inventors' congress is rigged up so the mouse gets a shock if he brushes against the copper-mesh hose.

Wires run from miniature batteries in the shoes thru stockings and garters to a coil in the girdle. No danger to the wearer either, the inventor claims.

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## Crickets

At this season householders are discovering—some with pleasure and some with dismay—that there is a cricket on the hearth, or somewhere near it.

Crickets like warmth and when the chill of Autumn begins to strike in they move indoors from their usual habitat of rocks and crevices. As soon as a heater of any sort is started in the house they will be found near its base or else close to the chimney somewhere above the cellar.

—*N. Y. Times.*

# Ridiculous Errors in Letter-writing

## *May Just as Well Be Avoided; How to Pick Words That Express Meaning Intended by Writer*

By VIRGINIA YOUNG

*This is the last of three articles on business letters reprinted from Printers' Ink, the preceding two having appeared in November and December issues of PESTS.*—EDITOR.

THIS article, the third of three on the subject of business correspondence, will be devoted chiefly to certain words that are often used which don't express the meaning intended.

There are many words that have been used incorrectly for a long time just because the people who have heard them have adopted them without checking into their true meaning. Let's take a minute to look at a few I have collected:

"I do not *anticipate* any trouble with this."

"Be sure to tell me what *transpires* at the meeting."

"*Since* he is here he might as well stay."

"We shall *forward* you a supply as soon as possible."

"We *omitted* to deduct this amount."

"We knew he had left *because* his hat was gone."

"We are very anxious to serve you."

APPROPRIATE—TAKE

APPROPRIATE means to set apart. TAKE means to lay hold of; seize. These words are not interchangeable.

AT—ABOUT

Either of these words is correct in its proper application, but together they can never be correct, for AT is specific while ABOUT is general.

ADVISE—INFORM (OR NOTIFY)

A well-meaning friend, or a parent advises; a letter only informs. When you simply give someone a piece of information you are not advising that person; you are merely informing him.

APPRECIATE—MEASURE (OR REALIZE)

To appreciate is to esteem adequately; to estimate but not to measure. One may appreciate a gift without knowing the degree of its value. "I appreciate how you feel about this" is not correct. You may realize, or understand, how another person feels, but you cannot appreciate his feelings. Neither can APPRECIATE be modified. Do not say, "We appreciate very much your taking care of this for us." APPRECIATE alone carries the complete meaning and any attempt to enlarge upon it causes redundancy.

BADLY—VERY MUCH

"He needs a haircut very badly" is incorrect.

BETTER—MORE

Do not say, "This will cost better than a thousand dollars." Maybe it isn't better; when you have to pay more than you expected to pay—it's worse!

BUT WHAT—THAT

BUT WHAT is never correct. BUT THAT is approved. THAT is usually sufficient.

BELIEVE—FEEL—THINK

"I feel that it is to our advantage."

"I believe I shall go tomorrow."

In these cases we neither feel nor believe; we only think. In the first sentence we are expressing our thoughts, not an indication of deep feeling or a sense of touch. Nor, in the second sentence, are we expressing confidence.

BALANCE—REMAINDER

BALANCE means equilibrium. REMAINDER means what is left after something is taken away. REST is also correct in this sense. The only remainder that can be spoken of correctly as BALANCE is a bank balance.

(Continued on page 32)

**CUTS—It Pays to Illustrate**

Write for Prices and Information

PESTS, Cut Dept.
512 East 14th St. Kansas City, Mo.

**Stock Up Now**
With

**Houchin's Insect Powder Guns, Bellows & Blowers**

Designed to Meet Your Every Requirement

SEND FOR CATALOG

Thos. W. Houchin Corp.
87 Ferry Street Jersey City, N. J.

CONSERVATIVE—LOW

CONSERVATIVE is often used for LOW. This is incorrect. CONSERVATIVE really is an attitude of mind. Never say, "This is a conservative price."

DEPLETE—REDUCE

To REDUCE is to make less. To DEPLETE is to use entirely. "The stock is depleted" means that the stock is exhausted.

DUE TO

DUE TO should not be used unless it modifies an accompanying noun. "His wages were reduced because of lack of business" is correct. "His wages were reduced due to lack of of business" is incorrect.

EXCESS—MORE THAN

EXCESS means intemperance. "He has more than a thousand dollars in the bank." "This heat is excessive."

FEWER—LESS

FEWER applies to individuals, bonds, certificates (number). "John had fewer apples than Jack." LESS applies to sugar, money (quantity). "John had less to eat than Jack."

FOR—BECAUSE

Distinguish between FOR and BECAUSE. "He was paid a large salary because of his value to the firm" is correct, but "I knew he had left because his hat was gone" is not correct. He had not *left because his hat had disappeared!* FOR is the correct word.

GENERALLY—USUALLY

GENERALLY means usually. USUALLY means customarily. "He usually takes a vacation in July" is correct.

KINDLY—PLEASE

"PLEASE hand me the telephone directory" is appropriate, but "Kindly hand me the telephone directory" is not.

LOCATE—FIND

To locate is to place in a certain spot. To find is to discover, or to obtain by search.

NOMINAL means existing in name only. One may sell an article for a very low price, but not for a NOMINAL price.

NOTICE—NOTE

NOTICE implies coming across something by chance; NOTE indicates more careful attention.

OFTEN—IN MANY INSTANCES

OFTEN is sometimes misused for IN MANY INSTANCES. "Basements are often made of concrete" means that we tear up and rebuild our basements frequently!

POSTED—INFORMED

Posting is an act of bookkeeping. A man cannot be posted. The book is posted; the man is well informed.

PARTY—PERSON

Webster's dictionary says, "Party, used to denote one person, is a vulgar, slang expression." I suppose telephone operators started this "party" atrocity years ago when they said, "Here's your party," but even they have discontinued this now. When speaking of a political party or a social gathering PARTY is correct, but one person can never be a party.

PROVIDED—PROVIDING

PROVIDE is a verb. PROVIDING (past tense) is a verb. PROVIDING is a verb, also, *but* Provided is the only one of the three that can be used as a conjunction.

PERSON—PEOPLE

PERSON means one human being. PEOPLE is a collective noun meaning a group of persons, usually a large number. PERSONS is preferable when speaking of just a few.

SAME

SAME cannot be used as a pronoun. "Thank you for your order. The same will be shipped at once" is one of the incorrect old timers that seems to have a pretty good foothold.

TRANSPIRE—OCCUR (OR HAPPEN)

The dictionary gives as the meaning of TRANSPIRE: "To pass off as a vapor; to emit or send out moisture of vapor through the skin; erroneously, to occur." So you can see that such a sentence as, "Please let me know what transpires at the meeting" is not only incorrect, but is also ridiculous.

TRUST—HOPE

When we merely want someone to do something, or think that he will do it, we do not "trust." To trust is to place confidence. A child trusts his parents. We trust banks with our savings.

YOURSELF—HIMSELF—OURSELVES

YOURSELVES, HIMSELVES, OURSELVES—are often used when YOU, HIM, WE, US or OUR would be much better. The following sentences were taken from actual business letters. How do they sound?

"It is the desire of ourselves to cooperate with you."

"We have a letter, written by yourself."

"It was given to himself as a token of our appreciation."

The "self" pronouns can be used effectively for emphasis, as "We, ourselves, will do it," but otherwise it is better to let them alone.

If we are proud of our letters we'll not be careless enough to transpose words and create such silly sentences as these which I have picked out of actual business letters:

**"We can make shipment of any orders you care to give us from stock."**

Does he carry a stock of orders?

**"Nothing will be sent to your men of a confidential nature."**

I suppose that the men who are not of a confidential nature will receive something?

**"Be sure the tire is returned by the customer that is defective."**

I wonder in just what way the customer is defective?

**"You will find this information in the carbon copy of my letter attached to Mr. Smith."**

Poor Mr. Smith! Imagine his embarrassment!

**"Very seldom is a battery returned to a manufacturer that is actually defective."**

A defective manufacturer?

**"Please read the booklet we are mailing you very carefully.**

Just how could one insure very carefully mailing of a booklet?

**"We have presented this bill to you for payment several times."**

Surely we would not wish anyone to pay the same bill several times!

Let us take the time to correct small flaws in grammar; perhaps by purchasing a handbook of English and spending a couple of hours a week with it.

Let us put forth the necessary effort to create euphonious sentence constructions; we'll not say such things as these:

"An *ordinary* tire would *ordinarily* cost you more.

"Fill out the *attached report* and *attach* it to your daily *report*.

"The chart is very *convincing* and with its use you should have no trouble *convincing* your customers."

"You are *going* to be *going* through Brownville and will find that the store manager is *going* to refuse to pay this bill."

We are really sending our photographs to our readers, when we write letters, for each letter gives the reader a picture of its writer. If you should have a photograph taken and it should turn out to be grotesque and unnatural, would you have copies made and send these copies out to all your friends? You'd get rid of that picture as soon as possible. Yet many letter writers send out letters that convey an equally grotesque picture of their personalities.

If you forget everything else, remember that people can be persuaded to do almost anything we want them to if we just use the right approach. Finding the right approach is not difficult; we simply put ourselves in the position of the reader and imagine what we'd like to have said to us.

Letters which are labored over are as a rule not good letters. They sound contrived and artificial. A letter that I wrote in fifteen minutes brought in $165,000 worth of reinstatement of accounts, and is still pulling strong. Letter writing is fun —and it is a challenge to the best there is in us. A friend of mine once remarked, "If it isn't in a man it can't come out." But it is in most of us—this friendly spirit which makes folks like us. Let's resolve that we will never again try to make our readers think of us as inhuman when we really are not that way at all.

# Additional Patents Relating to Pest Control

By DR. R. C. ROARK

EDITOR'S NOTE: *This service is provided through the Department of Agriculture for the purpose of bringing to the attention of those interested such matters that may be of assistance to the industry. The Department of Agriculture assumes no responsibility for the merits or workableness of of any of the inventions mentioned. Copies of all patents can be obtained for 10c (no postage stamps) sent to the Patent Office, Washington, D. C. When placing orders be sure to note the number of the patent, the date, the name of the patentee and the subject of the invention.*

2,258,319 (Oct. 7, 1941; appl. March 15, 1940). METHOD FOR THE CONTROL OF JAPANESE BEETLE. Samson R. Dutky, Morrestown, N. J.; Claude R. Wickard, as Secretary of Agriculture of United States of America, and his successors in office. A method for the control of Japanese beetle comprises disseminating in the soil the resistant stages of **Bacillus popilliae** or **Bacillus letnimorbus.**

2,258,556 (Oct. 7, 1941; appl. March 2, 1936; in Germany March 2, 1935). PROTECTING GOODS FROM VERMIN. Erik Schirm, Dessau, Anhalt, Germany. A mothproofing agent comprises a benzine soluble aromatic hydroxy compound substituted by at least one organic radical, all of such organic radicals being aliphatic in structure and at least one of which contains at least 4 carbon atoms, the aliphatic and hydroxy radicals being joined to the aromatic nucleus.

2,258,683 (Oct. 14, 1941; appl. Dec. 28, 1940). INSECT TRAP. Robert Ketterer, Philadelphia, Pa. This trap is especially adapted for catching insects such as household flies.

2,258,832 (Oct. 14, 1941; appl. Aug. 26, 1939). INSECTICIDAL OIL SPRAY. Alfred W. Weitkamp, Hammond, Ind.; Standard Oil Company, Chicago, Ill. The patentee claims the method of preventing the separation of insoluble deposits from tree spray oils containing hydroxy esters of high molecular weight organic acids and polyhydroxy alcohols of the class consisting of glycol and glycerol as emulsifiers and containing an oil soluble toxic of the class consisting of nicotine and oil soluble nicotine compounds, which method comprises adding a stabilizer to such oil sprays in amounts greater than 0.1 per cent and less than 1.0 per cent, said stabilizer being selected from the class of chemical compounds having the following composition: $N(R'R''R''')$ in which R' is a lower alkyl radical, R'' is a lower alkanol radical and R''' is selected from the group consisting of hydrogen, lower alkyl radicals and lower alkanol radicals.

2,258,833 (Oct. 14, 1941; appl. Aug. 26, 1939. INSECTICIDAL OIL SPRAY. Elmer W. Adams, Hammond Ind., and Thomas E. Sharp, Chicago, Ill.; Standard Oil Company, Chicago, Ill. The patentees claim the method of preventing the separation of insoluble deposits from tree spray oils containing an hydroxy ester of high molecular weight organic acids and polyhydroxy alcohols of the class consisting of glycol and glycerol and containing an oil soluble toxic of the class consisting of nicotine and oil soluble nicotine compounds, which method comprises adding a mahogany soap to such oil sprays in amounts greater than 0.1 per cent and less than 1.0 per cent.

2,259,869 (Oct. 21, 1941; appl. Sept. 30, 1939). INSECTICIDE AND REPELLENT. Clyve C. Allen, Wichita, Kans.; Shell Development Company, San Francisco, Calif. An insecticidal and fumigating composition contains as an active constituent an alkenyl acyl sulfide.

## Rats Destroy London's Foods

San Francisco—Insects and rodents have destroyed some of England's food supplies and rats have become a problem in bombtorn London, two University of California scientists told the National Pest Control Association.

Dr. Guy F. MacLeod, entomologist, said attempts to store grain and other milled food products in poorly constructed English attics, lofts and basements resulted in almost complete losses because the places were not properly fumigated.

William B. Herms, professor of parasitology, cited reports that 250,000 rats survived the bombing and fire of "the city."

—*Philadelphia Record, Oct. 30.*

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Leaflet describes foregoing insecticides with special bait chart for use in connection with powdered red squill.

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WRITE PESTS—American.

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(A verse written forty years ago!)

When the train pulls in and you grab your grip,
And the hackman's there with his frayed-out whip,
And you call on your man and try to be gay,
And all you get is "Nothing today,"
Then you're a Peddler!
By gad, you're a peddler.

When you get in a town and call on your man,
"Can't you see me, Bill?"—"Why sure I can."
You size up his stock, make a rough count,
And Bill presently says: "Send us the usual amount."
Then you're an Order Taker!
By gad, you're an order taker.

When you travel along and everything's fine,
And you don't get up until half-past nine,
And you see each concern and talk conditions,
And write it home with many additions
Then you're a Traveling Man!
By gad, you're a traveling man.

B U T

When you call on the trade and they talk "hard times,"
"Lower prices," "depression" and "decided declines,"
But you talk and you smile, make the world look bright,
And send in your orders every blame night,
Then you're a SALESMAN!
By gad, you're a salesman.

## Camden Gets Pied Piper

Camden, N. J.—Camden has hired a pied piper to rid the city of rats—by poison and traps. Dr. Samuel Lewin, of Audubon, who started the job recently, estimates the city's rat population at 235,000.

*—New York World Telegram.*

Most married men think they would be rich if they had remained single.

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